

WHISKEY GULCH SALVAGE TIMBER SALE

Environmental Assessment

**Montana Department of
Natural Resources and Conservation**

November 2008



WHISKEY GULCH SALVAGE TIMBER SALE ENVIRONMENTAL ASSESSMENT

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CHECKLIST ENVIRONMENTAL ASSESSMENT

Project Name:	Whiskey Gulch Salvage Timber Sale
Proposed Implementation Date:	November 2008
Proponent:	Lincoln Station, Clearwater Unit, Southwestern Land Office, Montana DNRC
Location:	Section 36, Township 15 North, Range 7 West
County:	Lewis and Clark

I. TYPE AND PURPOSE OF ACTION

The Clearwater Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing a commercial timber harvest on State-owned lands in the Flesher Pass area. The proposed harvest would take place in Section 36 of Township 15 North, Range 7 West. This section lies approximately 13 miles northeast of Lincoln, Montana (Attachment A, Vicinity Map).

Under the proposed action, DNRC would harvest approximately 2.5 million board feet (MMBF) of timber that is dead or in very poor health due to insects and disease. Harvest would occur on approximately 375 acres. The objectives of the proposed action would be to: 1) capture value of dead and dying trees and prevent future value loss; 2) restore the forest to its income-generating potential; and 3) generate revenue for the trust beneficiaries. An estimated \$150,000 in revenue to the Common School Trust would be generated through the implementation of the proposed action.

In addition to timber harvest, other activities would include road construction, road improvement, road maintenance, road closures, and reforestation. Under the proposed action, DNRC would construct approximately 4.25 miles of new road and abandon approximately 1.5 miles of old road. Approximately 3.25 miles of existing road would be improved to meet Best Management Practices Guidelines. Reforestation activities would include the planting of appropriate species for the site (western larch, ponderosa pine, lodgepole pine and Douglas-fir). DNRC would continue to assess reforestation and forest health needs following harvest activities. If the Action Alternative is selected, activities could begin the spring of 2009.

The lands involved in this proposed project are held by the State of Montana in trust for the Common Schools Grant (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and the DNRC are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for the beneficiary institutions (Section 77-1-202, MCA). The DNRC would manage lands involved in this project in accordance with the State Forest Land Management Plan (DNRC 1996) and the Administrative Rules for Forest Management (ARM 36.11.401 through 450) as well as other applicable state and federal laws.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED:

Provide a brief chronology of the scoping and ongoing involvement for this project.

DNRC sent scoping letters on December 3, 2007 to adjacent landowners, and known interested parties. A public notice was run in the Blackfoot Valley Dispatch. In addition to public scoping, resource professionals in state agencies, including the DNRC, were scoped to notify them and receive input. Comments received from various individuals, organizations, and agencies were used to help guide the development of the action alternative.

The mailing list of parties receiving initial scoping notices for this project is in the project file at the Lincoln Field office. Public scoping comments and a list of issues and concerns are also located in that project file.

2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:

A road use agreement would need to be obtained from the Stimson Lumber Company to legally travel across the southwest quarter of section 36, section 35 Township 15 North Range 7 West, and section 1 Township 14 North Range 7 West.

A 124 permit would need to be obtained from Montana Fish Wildlife and Parks to install a culvert, on an existing road, in an unnamed tributary of Willow Creek.

Slash burning would be done in compliance with state air quality regulations as well as any local restrictions.

3. ALTERNATIVES CONSIDERED:

No Action

None of the proposed harvest or roadwork would occur at this time. With access, the DNRC would consider future options for salvage and other forest management activities. Other current land use activities, including grazing and timber permits less than 200 thousand board feet (MBF) would continue.

Action Alternative

Under the Action Alternative, the DNRC would continue current land use activities, and harvest approximately 2.5 MMBF of timber that is dead or in very poor health due to insects and disease (Attachment A, Project Area Maps). DNRC would construct approximately 4.25 miles of road and abandon approximately 1.5 miles of existing road. Road improvement and road maintenance would occur on approximately 3 miles of existing access roads. Reforestation activities would include planting where natural regeneration is inadequate or where a species shift is desired. DNRC would continue to assess reforestation needs following harvest activities and the eventual subsidence of the western spruce budworm and mountain pine beetle epidemics.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT
<ul style="list-style-type: none">• <i>RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.</i>• <i>Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.</i>• <i>Enter "NONE" If no impacts are identified or the resource is not present.</i>

4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

Consider the presence of fragile, compactable or unstable soils. Identify unusual geologic features. Specify any special reclamation considerations. Identify any cumulative impacts to soils.

With the implementation of BMP's and recommended mitigation measures, the proposed action presents low risk of detrimental impacts to soils.

Please see attachment D for a detailed geology and soil analysis.

5. WATER QUALITY, QUANTITY AND DISTRIBUTION:

Identify important surface or groundwater resources. Consider the potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality. Identify cumulative effects to water resources.

The combination of abandonment/obliteration of old roads, improved stream crossing, and stream restoration measures will reduce chronic erosion and sediment sources and improve water quality compared to no-action. The action alternative will provide a long term reduction in stream sedimentation and improve water quality consistent with Upper Blackfoot TMDL (Total Maximum Daily Load) requirements. For all these listed reasons, there is low risk of direct or indirect impacts to water quality or downslope beneficial uses within the watershed.

Please see attachment D for a detailed watershed analysis.

6. AIR QUALITY:

What pollutants or particulate would be produced? Identify air quality regulations or zones (e.g. Class I air shed) the project would influence. Identify cumulative effects to air quality.

The DNRC is a member of the Montana/Idaho Airshed Group which was formed to minimize or prevent smoke impacts while using fire to accomplish land management objectives and/or fuel hazard reduction (Montana/Idaho Airshed Group 2006). The Group determines the delineation of airsheds and impact zones throughout Idaho and Montana. Airsheds describe those geographical areas that have similar atmospheric conditions, while impact zones describe any area in Montana or Idaho that the Group deems smoke sensitive and/or having an existing air quality problem (Montana/Idaho Airshed Group 2006).

The project area is located within Montana Airshed 6. Currently, this Airshed does not contain any impact zones, however there are a few scattered homes within 2 miles of the proposed harvest area.

No Action

Under the No Action Alternative, no slash piles would be burned within the project areas. Thus, there would be no effects to air quality within the local vicinity and throughout Airshed 6.

Action Alternative

Under the Action Alternative, slash piles consisting of tree limbs and tops and other vegetative debris would be created throughout the project area. These slash piles would be burned after harvesting operations have been completed. Burning would introduce particulate matter into the local airshed, temporarily affecting local air quality. Over 70% of emissions from prescribed burning is less than 2.5 microns (National Ambient Air Quality PM 2.5). High, short-term levels of PM 2.5 may be hazardous. Within the typical column of biomass burning, the chemical toxics are: Formaldehyde, Acrolein, Acetaldehyde, 1,4 Butadiene, and Polycyclic Organic Matter.

Under the Action Alternative, burning within the project area would be short in duration and would be conducted when conditions favored good to excellent ventilation and smoke dispersion as determined by the Montana Department of Environmental Quality and the Montana/Idaho Airshed Group. Prior to burning a "Prescribed Fire Burn Plan" would be done for the area. The DNRC, as a member of the Montana/Idaho Airshed Group, would burn only on approved days. Thus, direct and indirect effects to air quality due to slash pile burning associated with the proposed action would be minimal.

Harvesting and log hauling could create dust which may affect local air quality. Harvesting operations would be short in duration and any dust created would be expected to disperse before reaching any downwind receptors. Thus, direct, indirect, and cumulative effects to air quality due to harvesting and hauling associated with the proposed action would be minimal.

7. VEGETATION COVER, QUANTITY AND QUALITY:

What changes would the action cause to vegetative communities? Consider rare plants or cover types that would be affected. Identify cumulative effects to vegetation.

The proposed project area consists of primarily Douglas-fir cover types where lodgepole pine is also well represented. Non-forested areas, riparian areas and spruce cover types make up the rest of the harvest area.

Table 7-1: Cover Types for the Whiskey Gulch Salvage Timber Sale Project Area

Cover Type	Acres	Percent of Area
Douglas-fir	325	68%
Lodgepole pine	121	25%
Non-forested	26	5%
Spruce	3	<1%
Total	477	100

At the larger scale, DNRC lands managed by the Clearwater Unit are approximately 85% forested, mostly in the ponderosa pine and western larch/Douglas-fir cover types (Table 3-2). This area falls within climatic section 332B, the Bitterroot-Blackfoot, which was historically about 79% forested. Within the climatic section, the historically dominant cover type was lodgepole pine, followed by Douglas-fir and ponderosa pine on lower slopes (Losensky, 1997). There are 6 habitat types found within the project area. The most prevalent are those within the moderately cool and dry and moderately warm and dry; the cool and moderately dry; and the cool and moist habitat type groups.

Table 7-2: Current Cover Types for the entire Clearwater Unit

Cover Type	Current Cover Type (Acres)	Percent of Area
Douglas-fir	6,860	13%
Mixed Conifer	2,596	5%
Ponderosa pine	16,319	31%
Western larch/Douglas-fir	12,409	23%
Lodgepole	4,343	8%
Subalpine fir	2,956	6%
Hardwood	206	<1%
Non-forested	7,093	13%
Noncommercial	703	1%
Total	53,485	100%

Age class distributions in conjunction with other forest stand conditions or characteristics are useful in determining general historic conditions for inferring desired future conditions. Table 3-3 displays Age Class Distribution on project area and landscape scales. Stands in the seedling-sapling age class are under-represented compared to the historical condition for both the Clearwater Unit landscape and the project area, and the 100-149 and 150+ age classes are over represented. This deviation from historical conditions can partially be explained by successful fire suppression increasing the interval between fires and logging practices that did not necessarily mimic the disturbance of a wildfire.

DNRC has adopted old-growth definitions based on Green et al. (1992). The DNRC performed field reconnaissance and measured tree size and numbers using variable plot sampling to determine if any stands on the section met the definition of old growth. Four separate stands totaling approximately 81 acres were sampled. Of these four stands, one 22 acre area has at least eight trees per acre over 21 inches in diameter at breast height and at least 170 years old, thus meeting the definition of old growth. This stand primarily consists of Douglas-fir. The three additional stands, totaling approximately 59 acres, do not meet this definition. However they do have certain characteristics that are generally associated with old growth forests.

Table 7-3: Historic and Current Age Class Distribution

Percent of Analysis Area by Age Class Group (years):				
Analysis Area	00 - 39	40- 99	100 - 149	150+
Bitterroot-Blackfoot Climatic Section (historic)	29%	29%	21%	21%
Clearwater Unit*	6%	28%	35%	26%
Whiskey Gulch Salvage Project Area	0%	27%	43%	30%

* Approximately 5% of the Clearwater Unit does not have current age class data available

Stand structure characterizes stand development, disturbance and how a stand may continue to develop. Stand structure is classified as single storied, two storied, or multi-storied if there are one, two, or three main canopy layers, respectively. Heterogeneous describes areas with various combinations of those structures in small groups throughout the stand. Uneven-aged stands have trees of various sizes distributed throughout the stand. Table 3-4 displays the percent of each stand structure class of the Whiskey Gulch project area, compared to the entire Clearwater Unit land base (forested portions only).

Table 7-4: Proportion (%) of Analysis Area by Stand Structure

Stand Structure	Whiskey Gulch Salvage Project Area	Clearwater Unit
Single-storied	45%	28%
Two-storied	4%	11%
Multistoried	51%	23%
Heterogeneous	0%	25%
Uneven-aged	0%	13%

Single-storied stands are most often associated with stand replacement events, such as severe fires or regeneration harvests including clearcutting or seedtree cutting. Stands are fairly simple in vertical structure and are often even-aged. Regeneration harvests, such as a seedtree or shelterwood that retains 10% or more of the upper crown canopy, and has a seedling/sapling understory, are considered 2-storied stands. Two-storied stands have simple vertical structure and are frequently even-aged, although at least two age classes are generally present. The multi-storied condition arises when a stand has progressed through time and succession to the point that shade-tolerant species are replacing a shade-intolerant overstory. Three or more age classes may be present in these stands and vertical structure can be complex. These stands often experience a long interval between disturbances.

Past timber harvest has occurred on the section. There is no written data available related to these past harvests, but the conditions on the ground suggest that all harvests took place at least 30 years ago.

While stands throughout the project area vary in size, age, species composition, stocking, and past management activities, most all show signs of poor health and reduced vigor. The damage from the western spruce budworm is the most obvious problem. It has defoliated most Douglas-fir, true fir and spruce trees on the section. While budworm usually does not kill trees, the long duration and intensity of this epidemic, coupled with numerous other factors has lead to extensive mortality. Extensive mortality has also occurred throughout the section due to armillaria root disease, Douglas-fir bark beetle and the mountain pine beetle. The Douglas-fir beetle is primarily killing trees in the largest size classes that have shown the most

resistance to the budworm. The mountain pine beetle is primarily killing the most vigorous growing and largest lodgepole pine trees. One can assume the beetles are attacking these trees because they are the best available food source. Additional problems contributing to poor stand health and mortality include lodgepole pine mistletoe, western gall rust, and overstocking.

Existing regeneration is varied throughout the section in both quantity and quality. Most previously harvested areas are highly stocked with regeneration consisting primarily of Douglas-fir and lodgepole pine. The Douglas-fir component of this regeneration was relatively healthy prior to the budworm infestation, but now has suffered extensive mortality and top kill. The lodgepole regeneration is suffering from mistletoe and western gall rust, but some healthy areas can be found. In areas that have not been harvested in the past there are understory trees, however most are either undesirable species, such as sub-alpine fir, or are older stagnant trees with little potential as future crop trees.

No recorded threatened, endangered, or sensitive plant species were found in the analysis area (MNHP, 2008).

Primary noxious weeds noted are spotted knapweed and common mullein generally occurring as spot infestations along roadsides. Noxious weeds also occur along access roads and present a risk of spreading onto state lands.

No Action

No harvest would occur at this time. Timber stand health would likely continue to decline. Root rot infestations would continue to grow in size and bark beetle populations would continue to grow. It is likely some Douglas-fir of all size classes would survive the budworm epidemic but would continue to decline in vigor and be susceptible to root rot and bark beetle mortality. The 22 acre stand that currently meets old growth definitions would likely continue to suffer mortality. This mortality could be extensive enough that the stand would no longer meet the old growth definition, but the stand would maintain old growth characteristics. No tree planting would take place.

Under the No Action Alternative, the risk of noxious weed spread is similar to the existing conditions and weeds are likely to increase on roadsides and open areas. The future management would likely be to do roadside spraying as budgets allow.

Action Alternative

Under the Action Alternative, DNRC would harvest and remove approximately 2.5 million board feet of timber that is mostly dead or in poor health. Changes to the vegetation would include an immediate reduction in the density of trees on approximately 80% of the project area (375 acres). Root rot would continue to be a problem and could be exacerbated by the logging. The primary objective of the proposed treatments would be to salvage dead and dying timber, but establishing healthy regeneration would also be an important consideration. Therefore stands would be opened up to at least a shelterwood stocking level of approximately 40 trees per acre. However, across much of the section stand health is so poor that 40 leave trees per acre do not exist. It is estimated that mature leave trees will range from 6 to 40 trees per acre with some large openings up to a few acres in size. After harvest, it is likely that the 22 acre stand which currently meets old growth definitions would no longer meet that definition. However it would likely retain some old growth characteristics such as large trees and snags.

Reforestation and timber stand improvement needs, such as planting, would be assessed after the budworm epidemic. Planting of appropriate species would occur in areas that have not naturally regenerated in that time frame. Planting could also occur in large root rot pockets outside of harvest units. To protect against future losses from insects and disease, including root rot, ponderosa pine, lodgepole pine, and Douglas-fir would all be planted. Additionally western larch, which is currently very minimal on the section, would be planted in favorable locations. Pre-commercial thinning of advanced regeneration may be required in areas that have previously been harvested, however if mortality rates are too high these areas may also need to be planted.

Under the Action Alternative, noxious weeds could spread within the project area and new weeds could be introduced associated with timber harvest activities. The DNRC would consider an integrated approach to weed management for the proposed project. This approach would focus on preventing noxious weeds and controlling spot infestations. The DNRC would implement a combination of the following mitigations:

- **Requiring cleaning of off-road equipment to prevent weed introduction.** All road construction and harvest equipment would be cleaned of plant parts, mud, and weed seed to prevent the introduction of noxious weeds. Equipment would be subject to inspection by the forest officer prior to moving on site.
- **Monitoring the site for weeds as part of timber harvest contract administration.** DNRC would monitor the project area for noxious weeds as part of on-going timber sale administration to identify if additional erosion control, grass seeding or weed control may be needed. If new noxious weeds occur following the harvest, a control plan would be developed and implemented that may include spot herbicide treatments. If herbicides were used, application would be done using a licensed applicator in accordance with label directions, State laws, and rules of the Lewis and Clark County Weed District.
- **Prompt re-vegetation of roads and landings to limit the possible introduction of noxious weeds into the project area.**
- **Treat noxious weeds along access roads based on priority with an emphasis on controlling new weed infestations to reduce the potential for weed spread.** All newly disturbed soils on road cuts and fills would be promptly reseeded with site adapted grasses to reduce weed encroachment and stabilize roads from erosion.

On DNRC lands, this combination of action mitigations would likely result in a low risk of direct, indirect or cumulative effects.

8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:

Consider substantial habitat values and use of the area by wildlife, birds or fish. Identify cumulative effects to fish and wildlife.

During scoping, the following list of issues and concerns was developed regarding wildlife species that are not considered sensitive, threatened, or endangered.

- There is concern that the proposed timber harvest would negatively impact elk and mule deer hiding cover.

After detailed analysis, which can be found in Attachment B, the following was determined:

- There would likely be low to moderate risk of direct and indirect effects to elk and mule deer hiding cover if the proposed action is implemented. The no action alternative would likely result in minor direct and indirect effects to elk and mule deer hiding cover

Please see EA part 9 Unique, Endangered, Fragile or Limited Environmental Resources and Attachment C for fisheries effects on westslope cutthroat trout.

9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:

Consider any federally listed threatened or endangered species or habitat identified in the project area. Determine effects to wetlands. Consider Sensitive Species or Species of special concern. Identify cumulative effects to these species and their habitat.

During scoping, the following list of issues and concerns was developed regarding wildlife species that are considered sensitive, threatened, or endangered.

- There is concern that the proposed action would interfere with Grizzly bear activity in the vicinity during early spring and late summer.
- There is concern that the proposed action would reduce the quantity of lynx habitat in the project area.
- There is concern that the proposed activity would interfere with wolf denning or rendezvous sites during proposed harvest operations.
- There is concern that the proposed timber harvest would negatively impact pileated woodpeckers, fishers, and flammulated owls.

After detailed analysis, which can be found in Attachment B, the following was determined:

- If the action alternative is selected and the proposed mitigations were implemented, there is likely to be a low risk of direct and indirect effects and a minimal risk of cumulative effects to Grizzly bear activity in the early spring and late summer within the project area. If the No Action Alternative is selected there would likely be a slight increase in direct and indirect effects to Grizzly bears during early spring and late summer because roads would not be closed as effectively. Efforts to close roads in other parts of the analysis area would result in a minimal risk of cumulative effects under the no action alternative.
- There would likely be minor risk of direct, indirect and cumulative effects to lynx habitat under either alternative.
- Should a wolf den or rendezvous site be located within one mile of the project area, a DNRC wildlife biologist would be consulted to develop appropriate mitigations and implement ARM 36.11.430 for conservation of such sites. As a result, there would likely be low risk of direct and indirect or cumulative effects to wolf denning or rendezvous sites from the proposed action. Under the no action alternative there would be no change from current conditions related to direct, indirect, or cumulative effects to wolf denning or rendezvous sites.
- If the Action Alternative is selected, there would likely be a low to moderate risk of direct, indirect or cumulative impacts to pileated woodpeckers, fishers, and flammulated owls. Under the No Action Alternative there would likely be a low to moderate risk of direct, indirect effects and a minimal to moderate risk of cumulative effects. Under the No Action Alternative there would likely be low risk of direct, indirect or cumulative effects to flammulated owls.

During the public scoping process two written issues and one written comment were raised related to westslope cutthroat trout and related fisheries resources.

The two issues are:

- High road densities may cause elevated levels of sediment in downstream westslope cutthroat trout spawning reaches.
- Sedimentation from road location, construction and maintenance and logging associated activities may cause adverse impacts to westslope cutthroat trout habitat.

The single comment is:

- Harvest units fall within the immediate area of one of the most heavily used fluvial westslope cutthroat trout spawning areas within the entire Blackfoot Basin.

Issues raised internally include:

- The proposed actions may adversely affect fisheries habitat features, including channel forms, stream temperature, and connectivity.

After detailed analysis, which can be found in Attachment C, the following was determined:

- In terms of the Unnamed Tributary to Willow Creek Watershed, If the Action Alternative was selected and proposed mitigations were implemented, it would likely have (1) a positive effect on westslope cutthroat trout due to improved habitat connectivity and (2) a low to moderate risk of low impacts to fish

habitats. Cumulative effects to fisheries resources, in addition to existing conditions, would be expected to be very low.

- In terms of the Whiskey Gulch and Nora Gulch watersheds, if the Action Alternative was selected and proposed mitigations were implemented, it would likely have a low risk of very low impacts to fish habitats. No other fisheries resources would be expected to be directly or indirectly affected by the proposed actions. Cumulative affects to fisheries resources would be expected to be very low.

10. HISTORICAL AND ARCHAEOLOGICAL SITES:

Identify and determine effects to historical, archaeological or paleontological resources.

The project area has no previously identified cultural resources. If any archaeological sites are found, they would be protected. No direct, indirect, or cumulative impacts are expected as a result of the proposed action.

11. AESTHETICS:

Determine if the project is located on a prominent topographic feature, or may be visible from populated or scenic areas. What level of noise, light or visual change would be produced? Identify cumulative effects to aesthetics.

The Whiskey Gulch project area is located in a relatively unpopulated area, but is visible from a few nearby residences, Highway 279, (Flesher Pass Road) and Highway 200. It is not located near any major recreation or tourist destinations, but does receive some dispersed recreation use. The topography is relatively steep, averaging 40 to 50 percent slope and the section has a series of numerous draws, ridges and saddles.

The slopes that dominate the area are covered with Douglas-fir and lodgepole pine. With other conifers also represented and some hardwoods (black cottonwood, aspen, and willows) dispersed in the draws, and seeps. South and west facing slopes and ridges in the area are more open and the northerly aspects are densely stocked. Currently, large amounts of dead and severely defoliated trees are visible on the DNRC owned parcel and throughout the general area.

On neighboring private ownerships timber harvest and associated road building is common, resulting in a mosaic of various aged stands. On nearby United States Forest Service land historical timber harvests have been small in scale and are generally not noticeable. Although the area has a long history of timber harvest, the harvested ground varies from the form, line, color, and texture of nearby unharvested areas.

No Action

The visible mortality would be expected to increase over time under the no action alternative. The potential effects of the No Action Alternative would be perceived differently by different people, but overall it could be said that the No Action Alternative would likely result in minor direct, indirect, and cumulative effects.

Action Alternative

Under the Action Alternative the appearance of the section would change due to timber harvest and road construction activities. Approximately 375 acres that are currently heavily forested would be very open with only scattered seed trees and clumps of advanced regeneration remaining after the harvest. New roads would be visible on the hillsides and old roads that currently blend in with the surroundings would become visible.

During and immediately following harvest skid trails and skyline yarding corridors would be visible both in the foreground and when viewed from a distance. The straight skyline corridors do not follow the form of the natural landscape, but they would be expected to be grown in with grasses and low shrubs within a few years. Within 10-15 years they would likely be regenerated with trees and no longer be noticeable. Slash, would be left on site, and turn red. Slash generally disappears from the site within five years, and is often covered by other vegetation within three years.

During the summer, skidding equipment and log trucks may cause temporary dust clouds.

During harvest, activities would be quite audible. Depending upon air conditions, equipment can be heard many miles from their location. Although this does occur, it would occur during the general "work week", and would be temporary in nature.

The potential effects of the Action Alternative would be perceived differently by different people, but overall it could be said that the Action Alternative would likely result in minor direct, indirect, and cumulative effects.

12. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

Determine the amount of limited resources the project would require. Identify other activities nearby that the project would affect. Identify cumulative effects to environmental resources.

No measurable impacts are likely to occur under either alternative.

13. OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:

List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.

State Forest Land Management Plan EIS, DNRC 1996, set the strategy that guides DNRC management decisions statewide.

McDonald Gold Project EIS, Seven-Up Pete Joint Venture 1994, construction of a gold mine and removal of gold and associated activities on Section 6 T14N, R7W.

Still Cool Bugs Salvage Timber Sale EA, DNRC 2007, Harvest 1.0 MMBF on section 10 T14N, R08W

Keep Cool Bugs Timber Sale EA, DNRC 2005, harvest of 1.3 MMBF on section 10 T14N, R08W

Golden Arches EA, DNRC 2004, harvest of 5.6 MMBF in the Landers Fork drainage.

Cool Flat 4X4 EA, DNRC 2005, harvest of 1.5 MMBF on Sections 8, 16, 19, and 22 of T14N, R8W.

Lincoln Compound II Categorical Exclusion, FS 2003, harvest 155 MBF from 34 acres in Section 19 T14N, R8W.

Snow Talon Burned Area Emergency Rehabilitation Plan, FS 2003, assesses post-fire conditions.

Helena National Forest Weed EIS, FS 2004, proposes weed control on FS ground in the Lincoln area.

Lincoln Post-Fire Rehabilitation Project Categorical Exclusion, FS 2004, proposal to address non-emergency fire rehabilitation needs within the Snow Talon and Moose Wasson burned areas such as tree and shrub plantings, biological weed control, insect monitoring, pesticide, and pheromone treatments, and administrative site maintenance and repair.

Snow Talon Fire Salvage Draft EIS, FS 2005, proposal to salvage approximately 20-25 MMBF on up to approximately 2700 burned acres and associated activities and reclamation of 105 acres of old jammer trails all in the Copper Creek drainage and associated haul road in the Landers Fork and Copper Creek drainage.

See the cumulative effects analysis found in other sections of this EA for associated effects to resources.

IV. IMPACTS ON THE HUMAN POPULATION

- *RESOURCES* potentially impacted are listed on the form, followed by common issues that would be considered.
- Explain **POTENTIAL IMPACTS AND MITIGATIONS** following each resource heading.
- Enter "NONE" if no impacts are identified or the resource is not present.

14. HUMAN HEALTH AND SAFETY:

Identify any health and safety risks posed by the project.

Human health would not be impacted by the proposed timber sale or associated activity. Safety considerations and temporary risks would increase for the professional contractors working within the sale area. There are no unusual safety considerations associated with the proposed timber sale. The general public and local residents would not face increased health or long term safety hazards because of the proposed timber sale.

15. INDUSTRIAL, COMMERCIAL AND AGRICULTURE ACTIVITIES AND PRODUCTION:

Identify how the project would add to or alter these activities.

A sheep grazing lease is currently in effect for the project area. Under the No Action Alternative no short term changes would be expected. As trees die and expose the forest floor to more light an increase in forage would be expected, eventually these trees would fall over, possibly impeding the sheep's ability to use the areas. Under the proposed action alternative an increase in forage production would be expected, but slash would likely impede the sheep's ability to use harvested areas for several years.

16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

Estimate the number of jobs the project would create, move or eliminate. Identify cumulative effects to the employment market.

A few short-term jobs in the local area could be created for the duration of the proposed action.

17. LOCAL AND STATE TAX BASE AND TAX REVENUES:

Estimate tax revenue the project would create or eliminate. Identify cumulative effects to taxes and revenue.

The proposed action has only indirect, limited implications for tax collection.

18. DEMAND FOR GOVERNMENT SERVICES:

Estimate increases in traffic and changes to traffic patterns. What changes would be needed to fire protection, police, schools, etc.? Identify cumulative effects of this and other projects on government services

Aside from contract administration there would be minimal impacts related to demand for government services due to the relatively small size of the timber sale, the short-term impacts to traffic, and the possibility of a few people temporarily relocating to the area.

19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.

The DNRC operates under the State Forest Land Management Plan (SFLMP, DNRC 1996) and Administrative Rules for Forest Management (ARM 36.11.401 through 450, DNRC 2003). The SFLMP established the agency's philosophy for management of forested trust lands. The Administrative Rules provide specific guidance for implementing forest management projects.

20. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:

Identify any wilderness or recreational areas nearby or access routes through this tract. Determine the effects of the project on recreational potential within the tract. Identify cumulative effects to recreational and wilderness activities.

Currently the area is primarily used by walk-in recreationists and unauthorized ATV riders accessing United States Forest Service land to the east. Most of this use is associated with hunting. Under the proposed action alternative, recreationists may consider the logging and road building unsightly and slash may hinder walking. All existing and new roads would be closed to motorized use, and illegal ATV trails would be made impassable.

Under the No Action Alternative no impacts would be expected.

The nearest wilderness area is located approximately eight miles northwest of the proposed project area. No direct, indirect, or cumulative effects would be expected as a result of the proposed project.

21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

Estimate population changes and additional housing the project would require. Identify cumulative effects to population and housing.

There would be no measurable direct, indirect, or cumulative impacts related to population and housing due to relatively small size of the timber sale proposed project.

22. SOCIAL STRUCTURES AND MORES:

Identify potential disruption of native or traditional lifestyles or communities.

No negative direct, indirect, or cumulative effects would be expected under either alternative.

23. CULTURAL UNIQUENESS AND DIVERSITY:

How would the action affect any unique quality of the area?

No negative direct, indirect, or cumulative effects would be expected under either alternative.

24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

Estimate the return to the trust. Include appropriate economic analysis. Identify potential future uses for the analysis area other than existing management. Identify cumulative economic and social effects likely to occur as a result of the proposed action.

No Action: The active grazing lease on the Section would continue to provide annual revenue of approximately \$330.00.

Timber Harvest Alternative: Revenue from grazing would continue. The timber harvest would generate approximately \$150,000 for the school trust. This is based on a stumpage rate of \$10.00 per ton, multiplied by the estimated volume of 15,000 tons. This stumpage rate was derived by comparing attributes of the proposed timber sale with attributes and results of other DNRC timber sales recently advertised for bid. Costs related to the administration of the timber sale program are only tracked at the Land Office and Statewide level. DNRC doesn't track project-level costs for individual timber sales. An annual cash flow analysis is conducted on the DNRC forest product sales program. Revenue and costs are calculated by land office and statewide. The most recent revenue-to-cost ratio of the Southwestern Land Office was 2.43. This means that, on average, for every \$1.00 spent in costs, \$2.43 in revenue was generated. Costs, revenues, and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return.

EA Checklist Prepared By:	Name: Neil Simpson	Date: November 3, 2008
	Title: Management Forester	

V. FINDING

25. ALTERNATIVE SELECTED:

An Environmental Analysis (EA) has been completed for the proposed Department of Natural Resources and Conservation (DNRC) Whiskey Gulch Salvage Timber Sale. After a thorough review of the EA, project file, public correspondence, Department policies, standards and guidelines, and the Administrative Rules for Forest Management (ARM 36.11.401-450), I have made the following decisions:

Two alternatives were presented and were fully analyzed in the EA: the No-Action Alternative, which includes existing activities, but does not include tree planting and a timber sale (*EA parts 1 and 3*); and the proposed action, which proposes harvesting up to 2.5 million board feet of timber from 375 acres. This would also include road management and closures that are described in EA parts 1, 3, and 9.

For the following reasons, I have selected the **proposed action** without additional modifications:

- a. In my opinion, the proposed action best meets the purpose and need for action and the specific project objectives listed in the EA in part 1. The proposed action generates more return to the school trust than the no action alternative (*EA part 24*). The environmental effects of the proposed action are acceptable as compared with the no action alternative. No major losses in habitat, or unacceptable effects to water (*EA part 5, Attachment C, and D*) or soil (*EA part 5 and Attachment D*) would occur under the proposed action. No losses in habitat, or unacceptable effects to Threatened, Endangered, or Sensitive species (*EA part 9 and Attachment B and C*) would occur under the proposed action. The action alternative would decrease the susceptibility of remaining trees to further insect and disease infestations (*EA part 7*) and provide for planted seedlings within the analysis area after the budworm infestation (*EA part 7*).
- b. The analysis of identified issues did not reveal information compelling the DNRC not to implement the proposed action.
- c. The proposed action includes activities to address environmental concerns expressed by DNRC staff and the public.
- d. All proposed mitigations are adequate and feasible.

26. SIGNIFICANCE OF POTENTIAL IMPACTS:

For the following reasons, I find that the proposed action would not have significant impacts:

- a. **Economic Analysis:** The Action Alternative would return a greater amount back to the School Trust the No-Action. This increase is described in EA part 24.
- b. **Forest Health:** The Action Alternative is designed to remove feeding sites for the western spruce budworm and the mountain pine beetle (*EA part 7*). Trees would be planted after the outbreaks to help regenerate the site with acceptable species (*EA part 7*).
- c. **Aesthetics:** Much of the project area can be seen from Highway 200 and 279 and some surrounding residences (*EA part 11*). Immediately after harvest, slash would be evident after harvest (*EA part 11*) but should be less evident within a few years (*EA part 11*). The overall proposed activities should blend with the current natural mosaic and past activities on the surrounding landscape (*EA part 11*).

- d. **Noxious Weeds:** The project could contribute to the population of noxious weeds, but the DNRC will use an integrated approach to promote weed management (*EA part 7*). Increases of ground disturbance often cause increases the areas that weeds can inhabit. This project would use Integrated Weed Management (IWM) techniques which include: requiring cleaned equipment, treating existing weed patches, and grass seeding new roads (*EA part 7*).
- e. **Soils:** The primary risk to soils and their productivity are compaction and erosion (*EA Attachment D*). The project has been designed to leave tops, limbs, and unusable pieces of trees within the units to be recycled and return nutrients into the soils. To restrict compaction, harvesting would only be done when the forest officer approves soil moisture, skid trail design has been approved, and approved conditions and slopes for ground skidding (*EA Attachment D*).
- f. **Hydrology and Fisheries:** The primary water bodies within the project area are Nora Gulch, Whiskey Gulch, and a unnamed tributary to Willow Creek (*EA parts 4, 8, 9, and Attachment D*). Road relocation and abandonment, and BMP improvements would reduce sediment production and improve habitat connectivity (*EA part 9*). Treatments have been predicted to result in a low risk of direct, indirect, and cumulative impacts hydrologically, and for fluvial cutthroat trout (*EA parts 8, 9, and Attachment C*). A 124 permit is required for the placement of a creek crossing system on the unnamed tributary of Willow Creek(*EA part 2*).
- g. **Wildlife- Threatened, Endangered, and Sensitive Species:**
Grizzly bears, Canada lynx, wolves, pileated woodpeckers, fishers, and flammulated owls would show minimal to low risk of direct, indirect, and cumulative effects (*EA part 9 and Attachment B*).
- h. **Wildlife- Big Game (Elk and Mule Deer):**
There would likely be low to moderate risk of direct and indirect effects to elk and mule deer hiding cover if the proposed action is implemented (*EA part 8 and Attachment B*).

27. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:

☐ EIS
 ☐ More Detailed EA
 ☒ No Further Analysis

EA Checklist Approved By:	Name:	Craig V. Nelson
	Title:	Supervisory Forester
Signature:		Date:

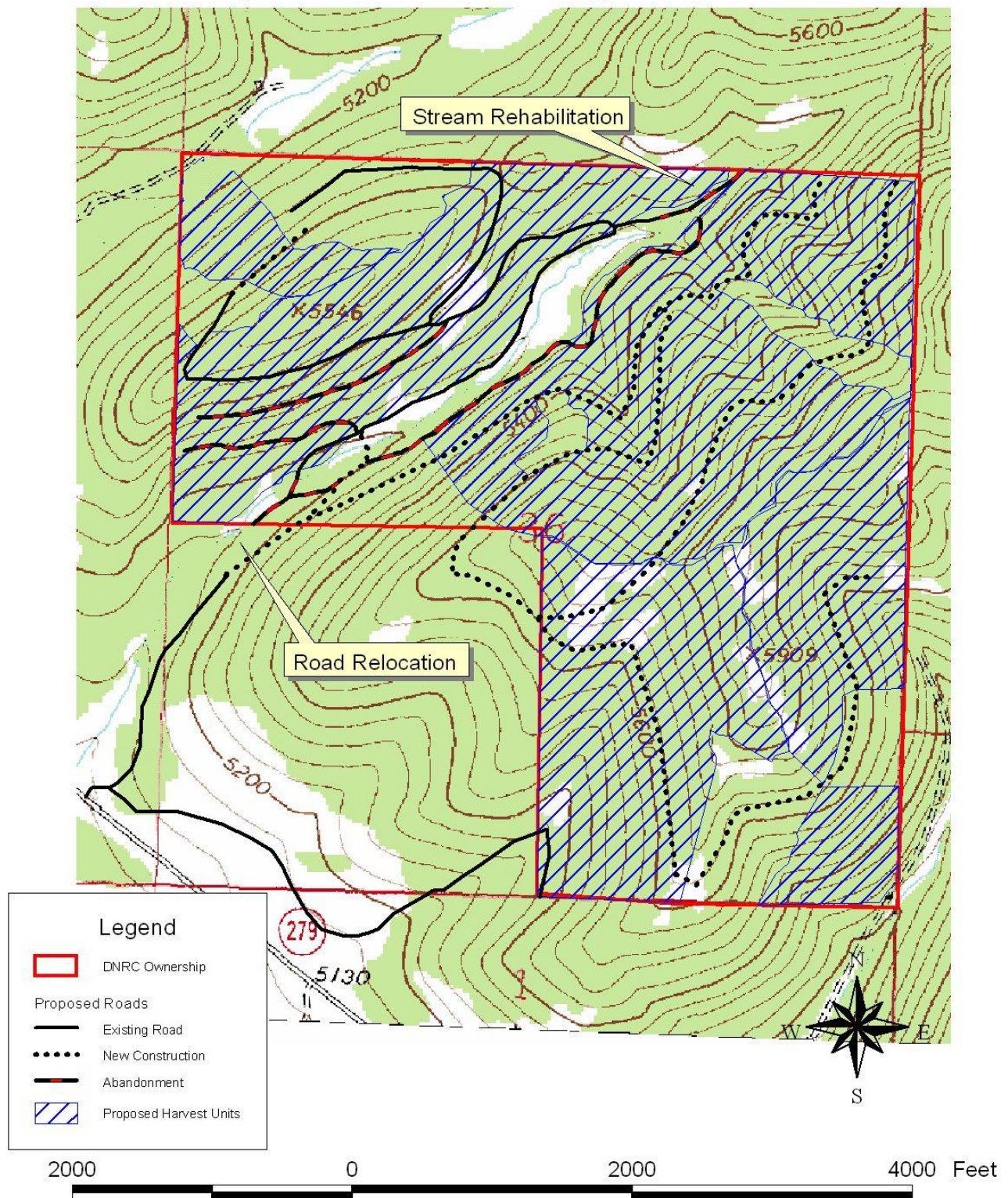
Attachment A

Maps

SWLO vicinity Map

Proposed Action

Whiskey Gulch Salvage Timber Sale



Attachment B

Wildlife Analysis

12 September 2008

Whiskey Gulch Timber Salvage Wildlife Analysis

Chapter 1

Issues and Concerns

There is concern that the proposed action would interfere with grizzly bear activity in the vicinity during early spring and late summer.

There is concern that the proposed action would reduce the quantity of lynx habitat in the project area.

There is concern that the proposed activity would interfere with wolf denning or rendezvous sites during proposed harvest operations.

There is concern that the proposed timber harvest would negatively impact elk and mule deer hiding cover.

There is concern that the proposed timber harvest would negatively impact pileated woodpeckers, fishers, and flammulated owls.

Issues Eliminated from Further Study

Bald Eagle—The nearest known bald eagle nest is located approximately 14 miles southwest of the project area. Due to the distance involved, there would likely be minimal risk of direct, indirect, or cumulative effects to this species from the proposed action.

Black-backed Woodpecker—While this species does inhabit stands infested with bark beetles (*Dendrochthonous* spp.), the affected parcel has been heavily infested with spruce budworm, a defoliator. As such, the affected parcel would not likely provide much currently suitable habitat for black-backed woodpeckers. However, since 2003, several large fires have occurred within a 33-mile radius of the parcel, most notably in 2003 and 2007. In 2003, approximately 14,839 acres burned on the Snow Talon and Moose Wasson fires; and approximately 64,939 acres burned on 5 fires (ranging in size from 71 to 42,437 acres) in 2007. Given the abundance of recently created habitat within 33 miles of the project area, there would likely be minimal risk of direct, indirect, or cumulative effects to this species from the proposed action.

White-tailed Deer—The main draw bottom of the affected parcel may see some use by white-tailed deer in summer and fall, however, the majority of the parcel is rugged and primarily mule deer habitat. Additionally, the affected parcel is outside of white-tailed deer winter range. As a result, there would likely be minimal risk of direct, indirect, or cumulative effects to this species from the proposed action.

The following species were considered but eliminated from detailed study due to lack of habitat present: Peregrine Falcon, Harlequin Duck, Townsend's Big-eared Bat, Coeur d'Alene Salamander, Northern Bog Lemming, Mountain Plover, and Columbian Sharp-tailed Grouse.

Chapter 3: Affected Environment

Description of Relevant Affected Resources

Wildlife

Issue: Conflicts with grizzly bear activity in early spring and late summer.

Grizzly bears are listed as federally threatened under the Endangered Species Act, and are the largest terrestrial predators in North America, feasting upon deer, rodents, fish, roots and berries, as well as a wide assortment of vegetation (Hewitt and Robbins 1996). Depending upon climate, abundance of food, and cover distribution, home ranges for male grizzly bears in northwest Montana can range from 60 - 500 mi² (Waller and Mace 1997). The search for food drives grizzly bear movement, with bears moving from low elevations in spring to higher elevations in fall, as fruits ripen throughout the year. However, in their pursuit of food, grizzly bears can be negatively impacted through open roads (Kasworm and Manley 1990). Such impacts are manifested through habitat avoidance, poaching, and vehicle collisions.

The affected parcel is located approximately one mile southeast of the Northern Continental Divide Ecosystem grizzly bear recovery area. The area receives use by grizzlies in the early spring and late summer when they are on the open ridges digging for biscuit roots (Montana Fish, Wildlife & Parks, scoping comments, 4 January 2008). Thus, the proposed project area may be part of one or more grizzly bear home ranges. Therefore, the cumulative effects analysis area for grizzly bears encompasses 166 square miles (106,357 acres), including Flesher Pass, portions of the Dearborn Elk Creek, and Monture Landers Fork bear management units of the NCDE, and a segment of the front range.

Grizzly bears are known to be more vulnerable to human interaction in areas with high open road densities or ineffective road closures. Currently there are 1.88 miles of open road per square mile (simple linear calculation; 311 miles of open road), and 2.37 total miles of road per square mile (394 miles of road), within the 166 square mile grizzly bear analysis area. Within the project area, there are approximately 5.01 miles of open road per square mile (project area is approximately 0.74 square miles), and approximately 5.19 miles of total road per square mile (simple linear calculation).

Issue: Reductions in Canada Lynx habitat.

Lynx are currently classified as threatened under the Endangered Species Act. In North America, lynx distribution and abundance is strongly correlated with snowshoe hares, their primary prey. Lynx foraging habitat has recently been characterized as having high horizontal cover, an abundance of shrub cover, large diameter trees during winter, and is typically in spruce-fir forest (Squires et al. 2006). Typically, lynx inhabit early- to mid-successional lodgepole pine, subalpine fir, and Engelmann spruce forest. For denning sites, the primary component appears to be large woody debris, in the form of down logs, root wads, and rock piles (Koehler 1990) surrounded by high horizontal cover (Squires et al. 2006, Squires and Laurion 2000, Squires and Laurion 2000, Mowat et al. 2000). These den sites are usually in mature, mesic forests on northeast aspects. Lynx also den along the

edges of regenerating forests where trees have blown down into jackstrawed piles of woody debris (Squires et al. 2006, Ruediger et al. 2000).

Elevations in the project area range from 5,200 to 5,909 feet, and approximately 26 acres of suitable habitat occur in the project area. There are approximately 4.9 acres of mapped denning/mature foraging habitat, and approximately 21 acres of mapped other lynx habitat (SLI database 20080804 version, and SLI field update data 08/20/2008). The approximately 4.9 acre stand of denning/mature foraging habitat is isolated in the center of the parcel from the mapped other lynx habitat. Snowshoe hares are important lynx prey and are associated with dense young lodgepole pine stands, as well as mature stands with subalpine fir understories. An approximately 48,621 acre analysis area was developed for lynx that encompassed the project area and utilized topography and habitat for its creation.

Issue: Conflicts with gray wolf denning or rendezvous sites.

Wolves north of Highway 12 west of Missoula and north of Interstate 90 were recently re-classified as endangered under the Endangered Species Act. Cover, and road and prey densities likely have some influence on wolves. Wolf activity has been documented in the area by a pair of wolves, through direct observation or tracks and scat. Additionally, the extent of the Monitor Mountain pack's range comes to within 2 miles of the project area. For cumulative effects analysis, the analysis area encompasses the current extent of the grizzly bear analysis area. Open road density within the cumulative effects analysis area is approximately 1.88 miles of open road per square mile (simple linear calculation; approximately 311 miles of open road). Currently, no known wolf den or rendezvous site is known to be located within 1 mile of the project area.

Issue: Impacts to elk and mule deer hiding cover.

Densely stocked thickets of conifer regeneration and overstocked mature stands provide hiding cover for elk and mule deer. Such stands can reduce the impacts of human-caused disturbance and reduce the animal's vulnerability to being harvested during the hunting season. Additionally, extensive (e.g., ≥ 250 acres) areas of forest cover ≥ 0.5 miles from open roads can serve as security cover. Thus, removing cover that is important for reducing hunting vulnerability through forest management activities could decrease mule deer and elk populations locally.

The project area contains approximately 267 acres of hiding cover, through heavily stocked mature stands. Within the approximately 39,687 acre cumulative effects analysis area, as defined by a surrounding contiguous block of elk winter range and topography, there is approximately 24,990 acres of hiding cover. Within the project area, there is no security cover due to an abundance of open roads near the parcel. However, within the analysis area, there are approximately 9,821 acres of security cover.

Sensitive Species

Pileated Woodpecker

The pileated woodpecker is one of the largest woodpeckers in North America (15-19 inches in length), feeding primarily on carpenter ants (*Camponotus* spp.) and woodboring beetle larvae (Bull and Jackson 1995). The pileated woodpecker nests and roosts in larger diameter snags, typically in mature to old-growth forest stands (Bull et al. 1992, McClelland et al. 1979). Due primarily to its large size, pileated woodpeckers require nest snags averaging 29 inches dbh, but have been known to nest in snags as small as 15 inches dbh in Montana (McClelland 1979). Pairs of pileated woodpeckers excavate 2-3 snags for potential nesting sites each year (Bull and Jackson 1995). Snags used for

roosting are slightly smaller, averaging 27 inches dbh (Bull et al. 1992). Overall, McClelland (1979) found pileated woodpeckers to nest and roost primarily in western larch, ponderosa pine, and black cottonwood. The primary prey of pileated woodpeckers, carpenter ants, tend to prefer western larch logs with a large end diameter greater than 20 inches (Torgersen and Bull 1995). Thus, pileated woodpeckers generally prefer western larch and ponderosa pine snags > 15 inches dbh for nesting and roosting, and would likely feed on downed larch logs with a large end diameter greater than 20 inches.

The most abundant habitat type (Pfister et al. 1977) within the affected area is Douglas-fir/pinegrass/pinegrass phase (Stand Level Inventory database). Within the affected parcel, there are approximately 150 acres that are predominately Douglas-fir or ponderosa pine, with average stand diameter ≥ 15 inches dbh that would be considered suitable pileated woodpecker habitat (crown cover $\geq 40\%$; SLI database). The cumulative effects analysis area will encompass the project area and a one mile radius surrounding it.

Fisher

The fisher is a medium-sized animal belonging to the weasel family. Fishers prefer dense, lowland spruce-fir forests with high canopy closure, and avoid forests with little overhead cover and open areas (Powell 1978, Powell 1977, Kelly 1977, Clem 1977, Coulter 1966). For resting and denning, fishers typically use hollow trees, logs and stumps, brush piles, and holes in the ground (Coulter 1966, Powell 1977).

Within a 1-mile radius of the project area, there are approximately 1,997 acres of fisher preferred habitat types, with approximately 318 acres on the affected parcel.

Flammulated Owls

The flammulated owl is a tiny forest owl that inhabits warm-dry ponderosa pine and cool-dry Douglas-fir forests in the western United States and is a secondary cavity nester. Nest trees in 2 Oregon studies were 22-28 inches dbh (McCallum 1994). Habitats used have open to moderate canopy closure (30 to 50%) with at least 2 canopy layers, and are often adjacent to small clearings. It subsists primarily on insects and is considered a sensitive species in Montana. Periodic underburns may contribute to increasing habitat suitability for flammulated owls because low intensity fires would reduce understory density of seedlings and saplings, while periodically stimulating shrub growth. Within the project area there are approximately 422 acres of flammulated owl preferred habitat types.

Chapter 4: Environmental Consequences

Wildlife

Issue: Conflicts with grizzly bear activity in early spring and late summer.

No Action Alternative

Direct and Indirect Effects

Under current conditions, some of the affected stands are experiencing 60% mortality among Douglas-fir and lodgepole pine from spruce budworm and an endemic population of mountain pine beetles, respectively. As a result, there would likely be a reduction in cover over the next several years through needle loss and toppling of standing dead trees. However, under this alternative no new roads would be constructed and existing roads would not be closed effectively. This may result in increased ATV use and a slight increase in direct and indirect effects to grizzly bear activity in early spring and late summer.

Cumulative Effects

Much of that portion of the analysis area between Hwy 200 and Flescher Pass has been experiencing defoliation among the Douglas-fir by spruce budworm for the last 2 to 3 years. Additionally, on the portion of the analysis area north of Hwy 200 on Sieben Ranch and school trust lands, efforts have been underway for two years to reduce or eliminate ATV use. These efforts have met with mixed results, but have generally resulted in a reduction in human activity in spring bear habitat in these areas. As a result, should there be increased motorized access on the affected parcel due to this alternative, efforts to reduce motorized access in other portions of the analysis area would minimize the risk of cumulative effects to grizzly bear activity in early spring and late summer.

Action Alternative

Direct and Indirect Effects

The proposed action would salvage timber on approximately 375 acres, construct approximately 4.25 miles of new road, and abandon approximately 1.48 miles of road. Because of road access limitations (i.e., wet roads), it is proposed that operations not occur between April 1 and June 15; this would reduce early spring disturbance. Due to operational constraints, it would not be possible to reduce the risk of late summer conflicts along ridges with grizzly bears. However, such operations would likely not last more than two years; thus, any conflicts with grizzly bear activity would be over a short time period. Also, roads accessing the project area would be closed with an effective road closure device (e.g., locked gate, tank trap, slash piles over the first 200 yards of the road, etc.) to limit motorized access following the proposed action. Should the proposed mitigations be instituted, there would likely be low risk of direct and indirect effects to grizzly bear activity in early spring and late summer within the project area.

Cumulative Effects

Under the proposed action, there would be no net increase in open road density, but total road density would increase from approximately 2.37 to 2.4 total miles of road per square mile within the analysis area. With the efforts to reduce motorized access on Sieben Ranch and school trust lands north of Hwy 200 within the analysis area, such reductions would likely offset any unlikely increases in motorized use of the affected parcel, should the proposed road closure devices prove ineffective. As a result, there would likely be minimal risk of cumulative effects to grizzly bear activity in early spring and late summer from the proposed action.

Issue: Reductions in Canada Lynx habitat.

No Action Alternative

Direct and Indirect Effects

Since 2005 the affected parcel has been heavily impacted by a spruce budworm infestation that has been defoliating, and killing, mature and sapling Douglas-fir on the affected parcel and areas primarily east of Hwy 200. This defoliation has also impacted understory trees that would contribute to the horizontal complexity associated with young and mature foraging habitat, as well as some features associated with denning habitat (Squires et al. 2006). As described under existing conditions, there are only approximately 4.9 acres of denning/mature foraging habitat on the affected parcel, and 21 acres of other lynx habitat. As a result, reductions, or changes, in lynx habitat are currently occurring within the affected parcel, and would continue under this alternative. Thus, this alternative would likely continue to result in minor direct and indirect effects to lynx habitat.

Cumulative Effects

As mentioned under direct and indirect effects, a spruce budworm infestation has been impacting Douglas-fir trees east of Hwy 200 within the analysis area since 2005. In 2005 and 2006, approximately 16,923 acres of the 48,621 acre analysis area were affected by the infestation. Estimates of the affected acres for 2007 and 2008 are not currently available. Given the level of infestation, and the insect's effects on Douglas-fir, sub-alpine fir, and spruce, lynx habitat will continue to be effected by spruce budworm within the analysis area until the infestation has run its course. Thus, the no action alternative on the affected parcel would likely continue to result in minor cumulative effects to lynx habitat within the analysis area.

Action Alternative

Direct and Indirect Effects

The proposed action would salvage dead and dying Douglas-fir, lodgepole pine, subalpine fir, and Engelmann spruce on approximately 375 acres within the affected parcel. Among those acres to be treated, 9.7 acres are currently mapped as lynx habitat, with 4.9 acres in denning/mature foraging, and 4.8 acres in other lynx habitat. The denning/mature foraging stand is approximately 0.28 mile from the nearest lynx habitat, is composed of Douglas-fir and lodgepole pine, and lacks subalpine fir and spruce. While this stand is a habitat type likely to be used by lynx (subalpine fir/dwarf huckleberry), the dearth of subalpine fir and spruce would likely currently preclude it from being a den site (Squires et al. 2008)

Under ARM 36.11.435 (4), the department shall not salvage within stands identified as necessary to meet denning habitat requirements. However, a subsequent ARM (36.11.435 (8)(a)), states that “the department shall maintain a minimum of five acres of denning habitat, where present, on parcels containing appreciable amounts of lynx habitat as determined at the project level.” Given that the stand mapped as lynx denning/mature foraging habitat: (1) likely would not be used due to the lack of subalpine fir and spruce (Squires et al. 2008); (2) is <5 acres; and (3) only approximately 26 acres of lynx habitat are predicted to occur on the project area (SLI database 20080804 update;), timber salvage would occur within this stand under the proposed action.

The effects of the proposal to harvest dead and dying timber on lynx habitat would likely not differ greatly from the No Action alternative because the affected stands are currently experiencing approximately $\leq 60\%$ mortality from the spruce budworm infestation (N. Simpson, DNRC Forester. 2007. Silviculture Plans. These plans can be located in the project file). Under the No Action alternative, canopy cover is lost through tree mortality, while snags and eventual coarse woody debris would be recruited. The proposed action would also remove canopy cover, would recruit fewer snags and coarse woody debris (as ARMs 36.11.411 and 414, respectively, would be applied), and would experience forest regeneration. Thus, there would likely be minor risk of direct and indirect effects to lynx habitat as a result of the proposed action.

Cumulative Effects

The proposed action would likely have only minor differences from cumulative effects for the No Action alternative. As discussed under direct and indirect effects, the proposed action would likely only differ from the No Action alternative through recruiting fewer snags and eventually, less coarse woody debris that could be used for den sites. Given the scale of the spruce budworm infestation within the analysis area, and the differences in snag and coarse woody debris recruitment, and small amounts of lynx habitat within the affected parcel (approximately 26 acres), there would likely be minor cumulative effects to lynx habitat within the analysis area due to the proposed action.

Issue: Conflicts with gray wolf denning or rendezvous sites.

No Action Alternative

Direct and Indirect Effects

No change from current conditions would be expected under the no action alternative.

Cumulative Effects

No change from current conditions would be expected under the no action alternative.

Action Alternative

Direct and Indirect Effects

Over the course of field preparations for this project, two wolves have been seen, and their tracks and scat have been encountered on several occasions by DNRC personnel. State wolf managers have done some preliminary investigations as to whether this is the start of a new pack, or part of the Monitor Mountain pack. However, their results have been inconclusive to date. The proposed action would not increase open road density, and through timber harvest, would make prey more vulnerable to wolf predation due to increased sight distances. Should a den or rendezvous site be located within one mile of the project area, a DNRC wildlife biologist would be consulted to develop appropriate mitigations and implement ARM 36.11.430 for conservation of such sites. As a result, there would likely be low risk of direct and indirect effects to gray wolf denning or rendezvous sites from the proposed action.

Cumulative Effects

As previously discussed, there currently are no known den or rendezvous sites within a one mile radius of the proposed action. Should one be discovered within this area, a DNRC wildlife biologist would be consulted to develop appropriate mitigations and implement ARM 36.11.430 for conservation of such sites. As a result, there would likely be low risk of cumulative effects to gray wolf denning or rendezvous sites from the proposed action.

Issue: Impacts to elk and mule deer hiding cover.

No Action Alternative

Direct and Indirect Effects

Since 2005 the affected parcel has been heavily impacted by a spruce budworm infestation that has been defoliating, and killing, mature and sapling Douglas-fir on the affected parcel and areas primarily east of Hwy 200. This defoliation has also impacted understory trees that would contribute to hiding cover. As a result, reductions, or changes, in hiding cover are currently occurring within the affected parcel, and would continue under this alternative. Thus, this alternative would likely continue to result in minor direct and indirect effects to elk and mule deer hiding cover.

Cumulative Effects

Over the two year period of 2005-2006 (the most recent years for which data was digitally available), 22,932 acres (58%) of the 39,687 acre analysis area had been infested with spruce budworm, which has affected Douglas-fir, subalpine fir, spruce, and larch in the area. As such, there has likely been mortality in seedlings and saplings of the affected species, and likely mortality in a portion of the overstory trees as well. Under this alternative, in the short term (0 – 15 years), the defoliation caused by the spruce budworm infestation would reduce hiding cover due to the loss of understory leaf area occupied by the affected species, while the standing snags from affected overstory trees would still provide some hiding cover benefit through breaking up sight distance. Over a longer term (15 – 40 years), the overstory snags would fall down or be harvested by woodcutters, while the forest regenerates. The regenerating saplings and pole size timber would then provide hiding cover through

increased leaf area and more dense timber stands. Thus, there would likely be low to moderate risk of cumulative effects to elk and mule deer hiding cover in the short term under the no action alternative.

Action Alternative

Direct and Indirect Effects

The proposed action would salvage dead and dying Douglas-fir, lodgepole pine, subalpine fir, and Engelmann spruce on approximately 375 acres within the affected parcel, and directly treat approximately 194 acres (73%) of the approximately 267 of hiding cover on the parcel. The remaining hiding cover would be on north-facing slopes in blocks ranging in size from 5 to 24 acres. The proposed harvest units will likely resemble seed tree harvests with reserves, meaning that residual overstory trees would be scattered and clumped throughout the units. As a result, there would likely be reduced hiding cover within the treated units in the short term (0 to 15 years post-harvest), until sapling and pole sized trees are able to regenerate. Removal of the overstory trees within the harvest units would have the greater impact on hiding cover than the baseline condition of standing snags that would break up sight distance. Thus, there would likely be a low to moderate risk of direct and indirect effects to elk and mule deer hiding cover on the affected parcel as a result of the proposed action.

Cumulative Effects

Given the scale of the spruce budworm infestation, with approximately 58% of the analysis area affected, and reduced hiding cover on these acres due to mortality in the sapling and pole timber size classes, approximately 11,227 acres (45%) of the approximately 24,990 acres of hiding cover within the analysis area were not affected, as of 2006. Thus, as of the last year digital data for the infestation were available (2006), hiding cover within the analysis area had been impacted by natural agents. The proposed treatment of approximately 194 acres of hiding cover within the affected parcel would thus provide a minor (approximately a 1% reduction), short term (0 to 15 years), and cumulative effect to elk and mule deer hiding cover within the analysis area.

Sensitive Species

Pileated Woodpecker

No Action Alternative

Direct and Indirect Effects

As previously discussed, the affected parcel has been heavily impacted by a spruce budworm infestation that has been defoliating, and killing, mature and sapling Douglas-fir on the affected parcel and areas primarily east of Hwy 200. This defoliation has impacted all 150 acres of pileated woodpecker habitat on the parcel. As a result, canopy closure < 40% is expected, which would reduce the suitability of the stands for nesting by this species. However, there would be a large pulse of larger diameter Douglas-fir snags, and eventually coarse woody debris, which could be used for foraging sites. The resulting stands may be of reduced value to pileated woodpeckers and increase their vulnerability to predation by avian predators. Thus, this alternative would likely have low to moderate risk of direct and indirect effects to pileated woodpeckers.

Cumulative Effects

Approximately 90% of the potential pileated woodpecker habitat within the analysis area was impacted by the spruce budworm infestation in 2005 and 2006. Digital data for 2007 and 2008 were not available to assess current infestation levels. As such, there have been reductions in canopy closure due to infestations in mature Douglas-fir, subalpine fir, spruce, and larch within these stands, and possibly mortality in a portion of these stands. Under this alternative, within potential pileated

woodpecker habitat there would likely be a mosaic of new snags, and possibly entire stands that have succumbed to the infestation. As such, the effects of the infestation would increase the habitat potential of some stands, while reducing the potential of others. Therefore, the no action alternative may have minimal to moderate risk of cumulative effects to pileated woodpecker habitat within the analysis area.

Action Alternative

Direct and Indirect Effects

The proposed action would treat all 150 acres of suitable pileated woodpecker habitat within the project area. As such, recruitment of snags and coarse woody debris that could be used for potential nest and foraging sites, would be greatly reduced compared to the no action alternative, as ARMs 36.11.411 and 414 would be implemented. Although the habitat suitability for the affected stands would be greatly reduced, due to reduced canopy closure, under the no action alternative, it would still retain valuable habitat features (i.e., more snags and downed wood) that could eventually be used by this species. However, reduction in snag and downed wood retention under the proposed action may reduce pileated woodpecker vulnerability to avian predators because this species may not utilize the post-harvest stands. As a result, there may not be a difference in the range of effects to pileated woodpeckers from either alternative. The proposed action would likely result in low to moderate risk of direct and indirect effects to pileated woodpeckers.

Cumulative Effects

Given the effects of the spruce budworm infestation within the rest of the analysis area (see No Action Alternative Cumulative Effects discussion), and that the proposed action would treat all 150 acres of the suitable pileated woodpecker habitat within the affected parcel, the commensurate reduction in potential pileated woodpecker habitat, due to the proposed treatment, would likely result in low to moderate risk of cumulative effects to pileated woodpecker habitat within the analysis area.

Fisher

No Action Alternative

Direct and Indirect Effects

As previously discussed, the affected parcel has been heavily impacted by a spruce budworm infestation that has been defoliating, and killing, mature and sapling Douglas-fir on the affected parcel and areas primarily east of Hwy 200. This defoliation has impacted all but 17 of the approximately 318 acres of potential fisher habitat on the parcel. As a result, canopy closure < 40% is expected, which would reduce the suitability of the stands for this species. However, there would be a large pulse of larger diameter Douglas-fir snags, and eventually coarse woody debris, which could be used for den and resting sites. The resulting stands may be of reduced value for fishers until mature stands can be re-established (approximately 60 years). Thus, this alternative would likely have low to moderate risk of direct and indirect effects to fishers.

Cumulative Effects

Approximately 55% of the approximately 1,997 acres of potential fisher habitat within the analysis area was impacted by the spruce budworm infestation in 2005 and 2006. Digital data for 2007 and 2008 were not available to assess current infestation levels. As such, there have been reductions in canopy closure due to infestations in mature Douglas-fir, subalpine fir, spruce, and larch within these stands, and possibly mortality in a portion of these stands. Under this alternative, within potential fisher habitat there would likely be a mosaic of new snags, and possibly entire stands that have succumbed to the infestation. As such, the effects of the infestation would increase the habitat

potential of some stands, while reducing the potential of others. Therefore, the no action alternative may have minimal to moderate risk of cumulative effects to potential fisher habitat within the analysis area.

Action Alternative

Direct and Indirect Effects

The proposed action would treat approximately 286 acres of the approximately 318 acres of potential fisher habitat within the project area. As such, recruitment of snags and coarse woody debris that could be used for potential den and resting sites, would be greatly reduced compared to the no action alternative, as ARMs 36.11.411 and 414 would be implemented. Although the habitat suitability for the affected stands would be greatly reduced, due to reduced canopy closure, under the no action alternative, it would still retain valuable habitat features (i.e., more snags and downed wood) that could eventually be used by this species. The proposed action would likely result in low to moderate risk of direct and indirect effects to fishers.

Cumulative Effects

The effects of the spruce budworm infestation, based on 2005-2006 data, have fragmented potential fisher habitat within the analysis area, with distances ranging between 0.25 mile and 1.0 mile between unaffected patches. Based on this data, approximately 895 acres of the approximately 1,997 acres of potential fisher habitat were unaffected by the 2005-2006 spruce budworm infestation; although portions of those acres may have been affected in subsequent years. The proposed action would treat all but 17 acres of the approximately 318 acres of potential fisher habitat within the project area, fragmenting travel corridors along ridges that might reduce travel distances among disjunct patches. Therefore, the proposed action may have low to moderate risk of cumulative effects to potential fisher habitat within the analysis area.

Flammulated Owls

No Action Alternative

Direct, Indirect, and Cumulative Effects

The spruce budworm infestation would reduce canopy closure, create legacy snags, and likely spur forest regeneration through the openings in the overstory that they create. Depending on the extent of the overstory mortality, the effects for flammulated owls could be variable under this alternative. In stands with limited to moderate overstory mortality, flammulated owl habitat could be improved within 15 years, provided forest regeneration occurs in the new openings. Stands that might experience more extensive mortality may suffer reductions in habitat suitability for this species, or may serve more as foraging areas. Thus, there may be minimal to low risk of direct, indirect, or cumulative effects for flammulated owls as a result of this alternative.

Action Alternative

Direct, Indirect, and Cumulative Effects

The proposed action would treat approximately 358 of the approximately 422 acres of flammulated owl preferred habitat types within the project area. Post-harvest, some treatment areas may resemble clearcuts with reserves, while still others may resemble seed tree harvests with reserves. The resulting stands will likely have limited value for flammulated owls for 40 to 60 years post-harvest. As a result, there would likely be low to moderate risk of direct, indirect, or cumulative effects for flammulated owls as a result of the proposed action.

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Attachment C

Fisheries Analysis

WHISKEY GULCH SALVAGE TIMBER SALE – FISHERIES ANALYSIS

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14 August 2008

1 OBJECTIVE

The purpose of this fisheries analysis is the assessment of potential impacts to fisheries within the Whiskey Gulch Timber Sale project area as a result of the proposed project's No-Action and Action Alternatives. This analysis follows the line of reasoning described in the Montana Environmental Policy Act for prudent consideration of the foreseeable impacts to a resource as a result of implementing proposed no-action and action alternatives.

1.1 INTRODUCTION

The Whiskey Gulch Timber Sale project area includes State trust lands within Section 36, T15N, R7W. The section lies within the Blackfoot River – Willow Creek (6th code HUC number 170102030202) drainage.

Willow Creek adjacent to the project area is identified on the 2006 Montana 303(d) list as an impaired waterbody downstream of the project area. This impaired stream reach is described as not supporting aquatic life and cold water fisheries, but no probable sources of the impairment are associated with past, existing or proposed activities in the project area.

Willow Creek adjacent to the project area is classified as B-1 in the Montana Surface Water Quality Standards (ARM 17.30.608(1)(a)). B-1 classifications are for multiple beneficial use waters including the growth and propagation of cold-water fisheries and associated aquatic life. Among other criteria for B-1 waters, a 1 degree Fahrenheit maximum increase above naturally occurring water temperature is allowed within the range of 32 to 66 degrees Fahrenheit (0 to 18.9 degrees Celsius), and no increases are allowed above naturally occurring concentrations of sediment or suspended sediment, which will harm or prove detrimental to fish or other wildlife. In regards to sediment, 'naturally occurring' includes conditions or materials present from runoff or percolation from developed land where all reasonable land, soil and water conservation practices have been applied (ARM 17.30.603(19)). Reasonable practices include methods, measures or practices that protect present and reasonably anticipated beneficial uses (ARM 17.30.603(24)). The State has adopted Forestry Best Management Practices (BMPs) through its Non-point Source Management Plan as the principle means of controlling non-point source pollution from silvicultural activities (Thomas et al 1990).

1.2 FISHERIES ANALYSIS AREAS

In order to evaluate the existing and potential impacts to fisheries within the project area, four different analysis areas that contain potentially distinct fisheries distributions were initially identified. From north to south these are the mainstem of Willow Creek, Nora Gulch, Unnamed Trib to Willow Creek and Whiskey Gulch watersheds (MAP 1 – WHISKEY GULCH TIMBER SALE PROJECT AND ANALYSIS AREAS). The initial analysis areas were chosen because they include: (1) the watersheds of known or potential fish-bearing streams or lakes and (2) the proposed harvest units and associated roads that could have foreseeable measurable or detectable impacts to those fish-bearing streams or lakes or (3) fisheries resources raised during scoping. The analysis areas are delineated using 6th code HUC scale or smaller watershed boundaries.

1.3 SPECIES

Native fish species within the analysis areas include westslope cutthroat trout (*Oncorhynchus clarki lewisi*). Introduced and non-native species that may persist within the analysis areas are eastern brook trout (*Salvelinus fontinalis*).

Westslope cutthroat trout are listed as Class-A Montana Animal Species of Concern. A Class-A designation is defined as a species or subspecies that has limited numbers and/or habitats both in Montana and elsewhere in the North America and elimination from Montana would be a significant loss to the gene pool of the species or

subspecies (Montana Fish, Wildlife and Parks, Montana Natural Heritage Program, and Montana Chapter American Fisheries Society Rankings). The Department of Natural Resources and Conservation has also identified westslope cutthroat trout as a sensitive species (Administrative Rule of Montana (ARM) 36.11.436).

1.4 FISHERIES ISSUES RAISED DURING SCOPING

Issues, in respect to this environmental analysis, are not specifically defined by either the Montana Environmental Policy Act or the Council on Environmental Quality. For the purposes of this environmental analysis, issues will be considered actual or perceived effects, risks, or hazards as a result of the proposed alternatives.

Three written issues or comments regarding fisheries resources were raised through public participation during the scoping process. The two written issues are: (1) high road densities may cause elevated levels of sediment in downstream westslope cutthroat trout spawning reaches and (2) sedimentation from road location, construction and maintenance and logging associated activities may cause adverse impacts to westslope cutthroat trout habitat. The single comment is: harvest units fall within the immediate area of one of the most heavily used fluvial westslope cutthroat trout spawning areas within the entire Blackfoot Basin.

Issues raised internally include: the proposed actions may adversely affect fisheries habitat features, including channel forms, stream temperature, and connectivity.

1.5 ANALYSIS METHODS

The existing conditions of fish populations and habitats will be described for each analysis area under the *EXISTING CONDITIONS* section of this assessment. The *ENVIRONMENTAL EFFECTS* section will compare existing conditions in each analysis area to the anticipated effects of the proposed No-Action and Action alternatives to determine the foreseeable impacts to associated fish populations and habitats.

Analysis methods are a function of the types and quality of data available for analysis, which varies among the different analysis areas. The analyses may either be quantitative or qualitative. The best available data for both populations and habitats will be presented separately for the mainstem of Willow Creek, Nora Gulch, Unnamed Trib to Willow Creek and Whiskey Gulch analysis areas. In order to adequately address the issues raised in *1.4 FISHERIES ISSUES RAISED DURING SCOPING*, the existing conditions and foreseeable environmental effects to fisheries resources in the analysis areas will be explored using the following outline of issues and subissues:

- Fisheries Populations – Presence/Absence
- Habitat – Channel Forms
 - Fisheries Habitat – Sediment
 - Fisheries Habitat – Flow Regimes
 - Fisheries Habitat – Large Woody Debris
- Habitat – Stream Temperature
 - Fisheries Habitat – Stream Shading
- Habitat – Connectivity
- Existing Collective Impacts and Cumulative Effects

Existing road density and road stream-crossing density are other variables that have been indirectly correlated to native fisheries population trends across large regional areas (*Quigley and Arbelbide 1997*). The mechanisms through which road density and road stream-crossing density affect native fisheries populations include sedimentation, fishing access, poaching, recreational access, timber harvest access, and grazing and agriculture (*Quigley and Arbelbide 1997, Baxter et al 1999*). As road density and road stream-crossing density are, therefore, very broad surrogates of multiple potential actions, these variables are tools to describe potential cumulative effects to fisheries. In the absence of site-specific fisheries data to describe the existing conditions of the project area, road density and road stream-crossing density could be considered simple, viable measures of potential cumulative effects. However, the level of detailed, project-specific fisheries population and habitat data to be utilized throughout this fisheries analysis is expected to provide a much more accurate and precise baseline for the cumulative-effects analysis of fisheries in the project area. Therefore, road density and road stream-crossing density will not be used as a measure of potential cumulative effects in this analysis.

Throughout the *EXISTING CONDITIONS* and *ENVIRONMENTAL EFFECTS* sections, the risk of a particular impact to fisheries resources is described. In terms of the risk that an impact may occur, a low risk of an impact means that the impact is unlikely to occur. A moderate risk of an impact means that the impact may or may not (50/50) occur. A high risk of an impact means that the impact is likely to occur.

A very low impact means that the impact is unlikely to be detectable or measurable, and the impact is not likely to be detrimental to the resource. A low impact means that the impact is likely to be detectable or measurable, but the impact is not likely to be detrimental to the resource. A moderate impact means that the impact is likely to be detectable or measurable, and the impact is likely to be moderately detrimental to the resource. A high impact means that the impact is likely to be detectable or measurable, and the impact is likely to be highly detrimental to the resource.

Cumulative impacts are those collective impacts on the human environment of the proposed action when considered in conjunction with other past, present, and future actions related to the proposed action by location or generic type (75-1-220, MCA). The potential cumulative impacts to fisheries in the analysis areas are determined by assessing the collective anticipated direct and indirect impacts, other related existing actions, and future actions affecting the fish-bearing streams.

2 ALTERNATIVES

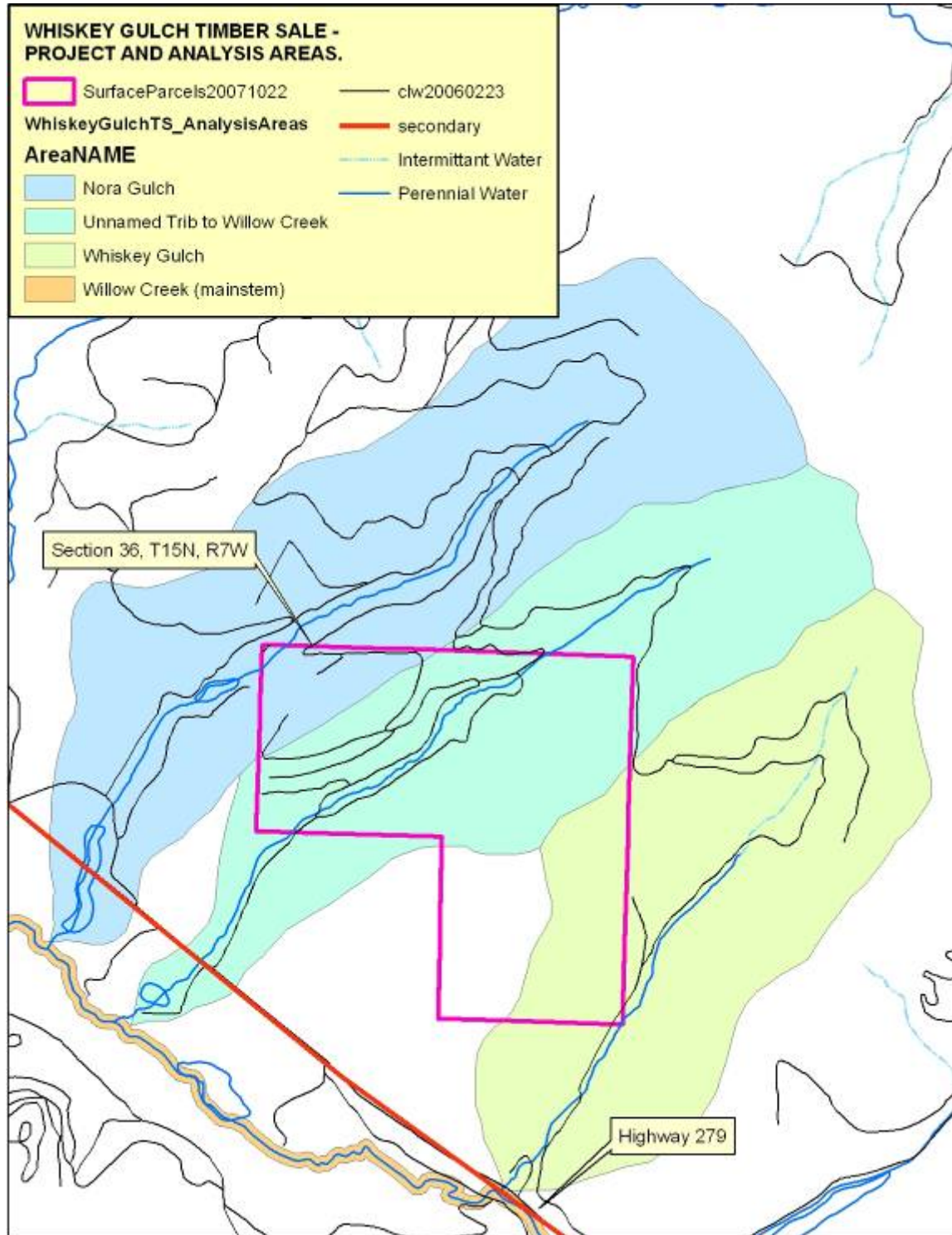
See *CHAPTER II, 3. – ALTERNATIVES CONSIDERED in the WHISKEY GULCH SALVAGE TIMBER SALE PROJECT CHECKLIST ENVIRONMENTAL ASSESSMENT* for detailed information, specific mitigations, and road-management plans pertaining to the No-Action and Action Alternatives.

2.1 PROPOSED ACTION ALTERNATIVE AND RELATED MITIGATIONS

The proposed Action Alternative within the project area includes up to 374 acres of total harvest area in 6 different harvest units.

Fisheries related resource mitigations that would be implemented with the proposed Action Alternative include: (1) applying all applicable Forestry BMPs (including the SMZ Law and Rules) and Forest Management Administrative Rules for fisheries, soils, and wetland riparian management zones (ARMs 36.11.425 and 36.11.426), (2) applying the SMZ Law and Rules to all non-fish-bearing streams and lakes, and (3) monitoring all road-stream crossings for sedimentation and deterioration of the road prism.

MAP 1 – WHISKEY GULCH TIMBER SALE PROJECT AND ANALYSIS AREAS.



2.2 ANALYSIS AREA DISMISSED FROM FURTHER ANALYSIS

After additional review and consideration of (1) the extent and location of the analysis areas, (2) the extent and location of the proposed harvest units and associated haul roads, and (3) the fisheries related resource mitigations, the determination has been made that the assessment of potential impacts to fisheries in the Willow Creek (mainstem) analysis area does not need to occur any further in this fisheries analysis. The rationale for this determination includes: (1) There are no fish-bearing streams or lakes within this analysis area that are adjacent to the proposed haul routes, and (2) there are no known streams in the three other analysis areas that would readily facilitate the delivery of measurable or detectable levels of sediment or other materials from the proposed haul routes or harvest units to Willow Creek (mainstem). There are not expected to be any potential adverse impacts associated with the proposed Action Alternative to the fisheries habitat features of channel forms, stream temperature, or connectivity in this analysis area. No foreseeable measurable or detectable direct, indirect, or cumulative effects to fisheries resources are expected in the Willow Creek (mainstem) analysis area.

3 EXISTING CONDITIONS

3.1 NORA GULCH AND WHISKEY GULCH ANALYSIS AREAS

The Nora Gulch analysis area contains approximately 2.2 total miles of streams (all stream types), and the Whiskey Gulch analysis area contains approximately 1.8 total miles of streams (all stream types). Although streams in both analysis areas have not been directly surveyed for fish species presence or absence, all streams in both analysis areas are presumed to be fish-bearing for the purposes of the proposed project actions. Westslope cutthroat trout were likely historic occupants of all fish habitat within both analysis areas, and westslope cutthroat trout and eastern brook trout may currently inhabit some or all stream reaches.

Fish habitat variables in both analysis areas that could potentially be affected by the proposed actions include channel forms and stream temperature. The zone of recruitable large woody debris is defined in this project area as the lateral distance from the streambank to a point equal to the average site potential tree height at 100 years for dominant and co-dominant tree species in the project area; in this case 75 feet. For practical purposes the zone of vegetation that is considered to have the greatest affect on stream shading in headwater streams in the project area is also generally confined to the area within the lateral extent of the average site potential tree height; in this case 75 feet.

Existing impacts to sediment that are common to both analysis areas include: adjacent road prism encroachment into the active floodplain, channel bank destabilization from grazing, unauthorized off-road vehicle use, and minor levels of past riparian harvest. Other impacts include potential sedimentation from 4 existing road-stream crossings in the Nora Gulch analysis area and 5 existing road-stream crossings in the Whiskey Gulch analysis area.

Considering historic fire-dominated disturbance regimes and minor levels of past riparian harvest, the existing rates of flow regime (see Hydrology and Soils Analysis) and large woody debris in fish habitats of both analysis areas are likely to be within the expected ranges of variability.

The existing conditions of sediment, flow regime, and large wood debris variables contribute to a collective, moderate impact to channel forms in both analysis areas, which is primarily due to existing impacts to sediment.

Although many different variables affect the natural fluctuations and ranges of stream temperatures (e.g. groundwater inflows, loss of flow, stream gradient, stream width to depth ratio, volume, beaver activity), stream shading is the variable that typically has the greatest effect on stream temperatures in valley-bottom, headwater streams and is also the variable most likely affected by management activities. As described above, minor levels of past riparian harvest have occurred in both analysis areas, and this activity is expected to have an existing low impact to stream shading and temperature.

Other impacts not related to the proposed project actions to be considered as part of the subsequent cumulative effects assessment include impacts to (1) populations and (2) connectivity at the various road-stream crossings. Native westslope cutthroat trout populations may be severely impacted from nonnative eastern brook trout

through competitive displacement and predation of juvenile fish. However, the exact status of fish species composition is unknown in both analysis areas, and actual existing impacts to populations may range from none to high. Fish habitat connectivity at the road-stream crossings may be limited from minor passage impairments to complete barriers. However, the exact existing status of fish species composition is unknown in both analysis areas, and fish passage barriers may in some cases be beneficial to native westslope cutthroat trout. Existing impacts to connectivity may therefore range from low to high.

3.2 UNNAMED TRIB TO WILLOW CREEK ANALYSIS AREA

The Unnamed Trib to Willow Creek analysis area contains approximately 2.1 total miles of streams (all stream types). Fish presence or absence surveys conducted by a Department of Natural Resources and Conservation fish biologist indicate that westslope cutthroat trout and eastern brook trout inhabit Unnamed Trib to Willow Creek below State Highway 279, and a resident population of westslope cutthroat trout is isolated upstream of the highway and throughout the project area. This isolated population is presumed to be genetically pure, and genetics samples were taken during July 2008 to test this assumption. However, the results of a genetics analysis are not expected until early 2009.

Fish habitat variables in both analysis areas that could potentially be affected by the proposed actions include channel forms, stream temperature and connectivity. The zone of recruitable large woody debris and vegetation (considered to have the greatest affect on stream shading) is 75 feet (see Section 3.1 above).

Existing impacts to sediment include: adjacent road prism encroachment and building construction in the active floodplain, channel bank destabilization from grazing, unauthorized off-road vehicle use, and minor levels of past riparian harvest. Other impacts include potential sedimentation from 5 existing road-stream crossings in the analysis area.

Considering historic fire-dominated disturbance regimes and minor levels of past riparian harvest, the existing rates of flow regime (see Watershed and Soils Analysis) and large woody debris in fish habitats are likely to be within the expected ranges of variability.

The existing conditions of sediment, flow regime, and large wood debris variables contribute to a collective, moderate impact to channel forms in both analysis areas, which is primarily due to existing impacts to sediment.

As described above, minor levels of past riparian harvest have occurred in both analysis areas, and this activity is expected to have an existing low impact to stream shading and temperature.

Two existing road-stream crossings on Unnamed Trib to Willow Creek are known to affect fish connectivity in the analysis area: one at State Highway 279 and one within the section comprising the project area. A third road-stream crossing below State Highway 279 may or may not affect connectivity. The crossing site at State Highway 279 is a complete barrier to fish passage. However, this structure has prevented the upstream migration of eastern brook trout and consequent adverse impacts to westslope cutthroat trout in the project area and surrounding land ownerships. In this particular case, this road-stream crossing is considered to have positive impact to native fisheries in the analysis area. The crossing site within the project area provides passage to adult westslope cutthroat trout but limits passage for juvenile fish. Existing impacts to connectivity are low, which are due to the road-stream crossing within the project area.

Other impacts not related to the proposed project actions to be considered as part of the subsequent cumulative effects assessment include impacts to populations below State Highway 279. However, the exact existing status of fish species composition in this portion of the analysis area is unknown, and actual impacts to populations may range from none to high.

4 ENVIRONMENTAL EFFECTS

4.1 NORA GULCH AND WHISKEY GULCH ANALYSIS AREAS

Direct and Indirect Effects of the No-Action Alternative to Fisheries

No direct or indirect effects are expected to fisheries resources in the Nora Gulch and Whiskey Gulch analysis areas beyond those described in the Existing Conditions.

Direct and Indirect Effects of the Action Alternative to Fisheries

Examples of actions that may negatively affect native westslope cutthroat trout and other fish species presence or distribution in the Nora Gulch and Whiskey Gulch analysis areas include the introduction of other non-native fish species, targeted fish suppression or other removal, stocking, and species introduction to previously uninhabited stream reaches. None of the actions associated with this alternative involve the direct or indirect manipulation of species population presence or distribution in either analysis area. Therefore, as a result of the selection of the Action Alternative, no additional direct and indirect impacts to westslope cutthroat trout or other fish species presence or distribution are expected in the Nora Gulch and Whiskey Gulch analysis areas.

Effects to channel forms in the fish-bearing reaches will be addressed by evaluating the collective potential impacts to sediment, flow regime, and large wood debris features. An increase in the proportion of fine substrates is an impact that would be expected to adversely affect channel forms. Short-term and long-term negligible or very minor impacts to substrates comprising stream channel forms could occur as a result of adjacent riparian or upland harvesting near fish-bearing and contributing non-fish-bearing streams. Although the *WATERSHED AND SOILS ANALYSIS* has determined that no measurable or detectable increase in sediment to streams in the Nora Gulch and Whiskey Gulch analysis areas would be expected as a result of the proposed action. The *WATERSHED AND SOILS ANALYSIS* has also determined that flow regimes in both analysis areas would be affected by the proposed actions, but these expected departures are expected to be well within the range of historic variability. Within the Nora Gulch analysis area upland timber harvesting would occur within 150 feet of fish-bearing streams for a distance of approximately 750 feet. Within the Whiskey Gulch analysis area upland timber harvesting would occur within 50 feet of fish-bearing streams for a distance of approximately 175 feet. The zone of recruitable large woody debris to fish-bearing streams is expected to extend approximately 75 feet from fish-bearing streams. Consequently, no measurable or detectable adverse impacts to large woody debris are expected in the Nora Gulch analysis area; a moderate risk of very low impacts to large woody debris is expected in the Whiskey Gulch analysis area. Considering potential effects to sediment, flow regime, and large woody debris recruitment, a low risk of very low impacts to channel forms is expected.

For practical purposes, the zone of vegetation that is considered to have the greatest affect on stream shading in valley-bottom, headwater streams in the project area is generally confined to the area within the average lateral extent of mature riparian vegetation; in this case, approximately 75 feet. Since the proposed actions do not involve the harvesting of any riparian vegetation in the Nora Gulch analysis area, the proposed action is not expected to have an effect on stream shading in that analysis area. The proposed actions in the Whiskey Gulch analysis area include riparian harvesting between 50 feet and 75 feet from fish-bearing streams for a distance of approximately 175 feet. Consequently, no impacts to stream temperature are expected in the Nora Gulch analysis area; a low risk of very low impacts to stream temperature is expected in the Whiskey Gulch analysis area.

The proposed Action Alternative does not include any actions that would affect fisheries connectivity in either analysis area.

Cumulative Effects of the No-Action Alternative to Fisheries

In the Nora Gulch and Whiskey Gulch analysis areas other future related actions that are expected to continue, even if the No-Action Alternative is selected, include: sediment impacts in the active floodplain from adjacent road prism encroachment, building construction and road-stream crossings, channel bank destabilization from grazing, unauthorized off-road vehicle use, and potential riparian harvest on other land ownerships. Adverse impacts from nonnative species interactions and restricted connectivity may also continue to occur. As a result, these collective impacts are expected to result in a moderate risk of moderate impacts in both analysis areas.

Cumulative Effects of the Action Alternative to Fisheries

Considering no impacts are anticipated to species presence or distribution, a low to moderate risk of very low impacts to channel forms and stream temperature, and no impacts to connectivity, an overall low risk of very low additional cumulative impacts to fisheries resources is expected to occur beyond those described under the No-Action Alternative.

4.2 UNNAMED TRIB TO WILLOW CREEK ANALYSIS AREA

Direct and Indirect Effects of the No-Action Alternative to Fisheries

No direct or indirect effects are expected to fisheries resources in the Unnamed Trib to Willow Creek analysis area beyond those described in the Existing Conditions.

Direct and Indirect Effects of the Action Alternative to Fisheries

The proposed actions involving the direct or indirect manipulation of species population presence or distribution include (1) the removal of the road-stream crossing structure in the project area that currently limits fish habitat connectivity and (2) the installation of a new structure that would provide passage to all fish life stages at all flows. These proposed actions would have a positive impact to the isolated population of westslope cutthroat trout by providing improved connectivity to available habitats. Therefore, as a result of the selection of the Action Alternative, positive direct and indirect impacts to westslope cutthroat trout distribution and habitat connectivity are expected in the Unnamed Trib to Willow Creek analysis area.

Short-term moderate impacts to sediment will occur during the removal and installation of the road-stream crossing structures, however, long-term risks to sediment at the road-stream crossing sites are expected to be lower than those described in the Existing Conditions. The *WATERSHED AND SOILS ANALYSIS* has determined that the proposed actions at the road-stream crossing sites and other stream channel restoration activities will cause low to moderate short-term impacts, but a long-term net positive impact to sediment is also expected. Site specific erosion control mitigations and BMPs would be implemented at these road-stream crossing sites. The *WATERSHED AND SOILS ANALYSIS* has also determined that flow regimes in the analysis area would be affected by the proposed actions, but the expected departures are expected to be well within the range of historic variability. Within the Unnamed Trib to Willow Creek analysis area upland timber harvesting would occur within 50 feet of fish-bearing streams for a distance of approximately 1,100 feet. The zone of recruitable large woody debris to fish-bearing streams is expected to extend approximately 75 feet from fish-bearing streams. Consequently, a moderate risk of very low impacts to large woody debris is expected in the analysis area. Considering potential effects to sediment, flow regime, and large woody debris recruitment, a moderate risk of low impacts to channel forms is expected in the short-term, but the long-term impacts are expected to be very low.

For practical purposes, the zone of vegetation that is considered to have the greatest affect on stream shading in valley-bottom, headwater streams in the project area is generally confined to the area within the average lateral extent of mature riparian vegetation; in this case, approximately 75 feet. The proposed actions in the Unnamed Trib to Willow Creek analysis area include riparian harvesting between 50 feet and 75 feet from fish-bearing streams for a distance of approximately 1,100 feet. Consequently, a low risk of very low impacts to stream temperature is expected in the Whiskey Gulch analysis area.

Cumulative Effects of the No-Action Alternative to Fisheries

In the Unnamed Trib to Willow Creek analysis area other future related actions that are expected to continue, even if the No-Action Alternative is selected, include: sediment impacts in the active floodplain from adjacent road prism encroachment, building construction and road-stream crossings, channel bank destabilization from grazing, unauthorized off-road vehicle use, and potential riparian harvest on other land ownerships. Adverse impacts from nonnative species interactions and restricted connectivity may also continue to occur. As a result, these collective impacts are expected to result in a moderate risk of moderate impacts in both analysis areas.

Cumulative Effects of the Action Alternative to Fisheries

Considering positive impacts are anticipated to species distribution and habitat connectivity, and a low to moderate risk of low to very low impacts to channel forms and stream temperature, an overall low risk of very low additional cumulative impacts to fisheries resources is expected to occur beyond those described under the No-Action Alternative.

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Quigley, T.M. and S.J. Arbelbide, tech eds. 1997. An Assessment of Ecosystem Components in the Interior Columbia Basin and portions of the Klamath and Great Basins. Gen. Tech. Rep. PNW-GTR-405. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 4 vol.

Thomas, J., K. Sutherland, B. Kuntz, S. Potts. 1990. Montana Nonpoint Source Management Plan. Montana Department of Health and Environmental Sciences, Water Quality Bureau, Helena, MT.

Attachment D

Watershed and Soils Analysis

September 12, 2008

TO: NEIL SIMPSON, Forester, Lincoln Office, and Clearwater Unit
CRAIG NELSON, Lead Forester, Clearwater Unit
JON HAYES, Silviculturist, Southwestern Land Office

FROM: JEFF COLLINS, Hydrologist

RE: Watershed/Soils/Noxious Weeds, Report for Whiskey Gulch Salvage Timber Sale
Partial Section 36, T 15N, R17W

The following includes an existing condition and effects assessment for soils and watershed, resources for the proposed Whiskey Gulch Salvage Timber Sale Environmental Assessment. The following issue statements were developed from internal and public scoping concerning water resources, soils and noxious weeds, regarding the effects of proposed timber harvest and road systems.

Potential soil and watershed issues with this project are:

Geology/Soil Resources- Road construction and timber management activities on unstable geologic material can cause slope instability. Equipment operations and timber harvest on wet sites or sensitive soils could result in direct and cumulative soil impacts that effect soil productivity depending on the area and degree of soil impacts.

Water Quality/Quantity- Land management activities such as timber harvest and road construction could impact water quality primarily by accelerating sediment delivery to local stream channels and draw bottoms. Sediment sources include erosion from roads, skid trails, log landings and crossing construction and restoration measures. Tree canopy reduction by tree mortality or timber harvest activities can affect the timing of runoff, increase peak flows and increase the total annual water yield of a particular drainage.

Existing Conditions- Geology & Soils

The analysis area for geology and soil resources includes the access roads to the project area and the State lands within DNRC section 36, T 15N, R17W. The soils analysis included an evaluation of soil survey data and on-site field review for soil properties and current conditions to assess past effects.

Bedrock geology is primarily Spokane Shale/argillite, with local volcanic intrusions on the northeast side of the section. The Spokane formation is fractured and is good for road construction and resilient to erosion. The bedrock is overlain with alpine glacial till deposits on concave slopes and alluvium in the stream bottoms. The majority of slopes in the project area are stable with localized areas of marginal stability that would be avoided. Because of this no further analysis of slope stability is necessary. No unique geologic features occur, except for mineral potential at depth. Shallow rock occurs near the ridgelines and upper slopes, but should be common excavation or rippable and do not limit proposed road construction. An alluvial fan forms the upper stream bottom near the NE boundary of DNRC section 16, and the stream is entrenched through a part of the fan.

Soils located on northerly aspects in the project area are a combination of map unit 790F Stemple-Tigeron very channery loams, cool phase on 30 to 60 percent slopes. These are moderate to low productivity soils and support Douglas-fir and Lodgepole pine. Stemple soils have a shallow gravelly silt loam surface over deep high gravel content subsoils and fractured bedrock on mountain sideslopes. Tigeron soils occur on more concave slopes, alluvial fans and have slightly deeper surface soils, water retention and slightly higher plant growth potential than the Stemple soils. The majority of this soil map unit has more moderate slopes of 20-50. These are well drained soils with rapid infiltration and deep percolation in the fractured bedrock. These are resilient soils with a moderate risk of displacement, compaction and erosion for ground based operations on slopes up to 45%. Slopes over 45% have a high risk of displacement and require cable harvest to minimize soil impacts. Implementing BMP's and standard road drainage can control erosion and high gravel content allows a long season of use.

Soils located on southerly aspects in the project area are a combination of 690F Stemple-Tigeron very channery loams, dry phase vegetation on 30 to 60 percent slopes. Soil properties and interpretations are similar to the 790F map unit, except the south slopes are more droughty, tend to have slightly less surface soil depth and slightly lower vegetative productivity. High gravel content soils and drier sites on road cut and fillslopes can be slow to revegetate, unless promptly reseeded.

Alluvial soils occur in stream valley bottoms as a complex of gravels on shallow stream terraces, and deeper somewhat poorly drained, clay rich materials adjacent to streams and beneath wetlands. These alluvial soils support mainly deep sod grasslands with sedges and some spruce. The deep sod provides a buffer that traps sediment and will revegetate quickly. These materials are fair to poor for road construction and may require turnpiking with more suitable fill for road crossings. These soils are subject to rutting and compaction if operated on when wet though no harvest is planned on these alluvial soils. The existing access road from HWY 279 crosses segments of clay rich soils that will limit access during spring thaw up to mid-June. Season of use is limited to frozen ground or relatively dry summer months on these clay-rich soils.

Approximately 60 acres in the NW corner of DNRC section 36 was partially harvested in the 1970's on moderate slopes, and some historic selection harvest (hand fell/crosscut) occurred over 80 years ago. The previous harvest areas are well regenerated and overstocked. Road spacing is closer than would be planned today, but the roads are stable and impacts minimal.

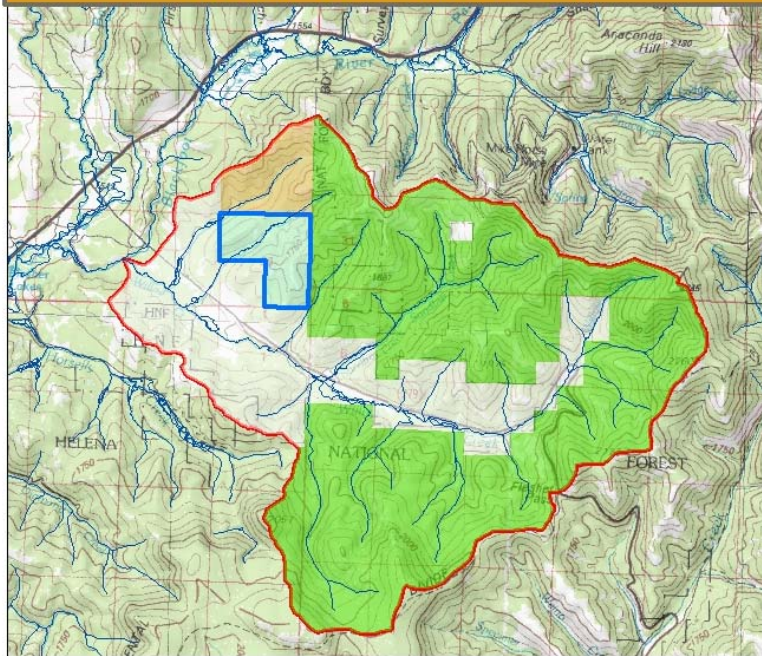
Existing Conditions- Watershed

The Whiskey Gulch Salvage project is located on state trust land within $\frac{3}{4}$ of Section 36, T15N, R7W of Lewis and Clark County. The watershed analysis area is located within the Blackfoot River watershed and considers the Willow Creek watershed (HUC 170102030301) and principally the Willow Creek tributary streams of Nora Gulch, Whiskey Gulch and an unnamed tributary "A" to Willow Creek (refer to the analysis area maps W1,W2). DNRC also considered a small face drainage that does not deliver surface water flow to Willow Creek. The small face drainage includes approximately 40 acres of proposed harvest on stable gravelly uplands with no surface water and very low potential for effects, and will not be considered for further analysis.

A watershed analysis was completed by a DNRC hydrologist for the proposed sale area to determine direct, indirect and cumulative effects to water quality. The water quality evaluation included a review of existing inventories for soils and water resources (NRIS 2008), the 2005 Upper Blackfoot Restoration Plan (BFC 2005) and aerial photos comparisons of past timber harvest. On the ground reconnaissance surveys of roads and streams were completed across all ownerships for sediment sources. Mitigations/restoration measures to reduce sedimentation were then developed from these reconnaissance surveys.

Willow Creek is a 3rd order stream that flows from the Continental Divide near Flesher Pass to the Blackfoot River. The Willow Creek watershed is 12,401 acres in size. The project section is located in the lower portion of the Willow Creek drainage and the mainstem of Willow Creek is not located within the State section 36 or near any of the proposed road construction or existing roads planned for access use or harvest areas. The terrain in the project section is gentle to moderately steep slopes along the northeast side of Willow Creek, below the Continental Divide. Elevations in the Willow Creek watershed range from 5,000 to 6,000 at peak, and from 5,200 to 5,900 feet within the project area. Within the analysis area, average precipitation is moderate at approximately 25 inches a year, occurring mainly as snow. Snow squalls may occur even through the summer months.

**Whiskey Salvage Sale Section 36, T15N, R7W
Willow Creek Watershed**



Legend

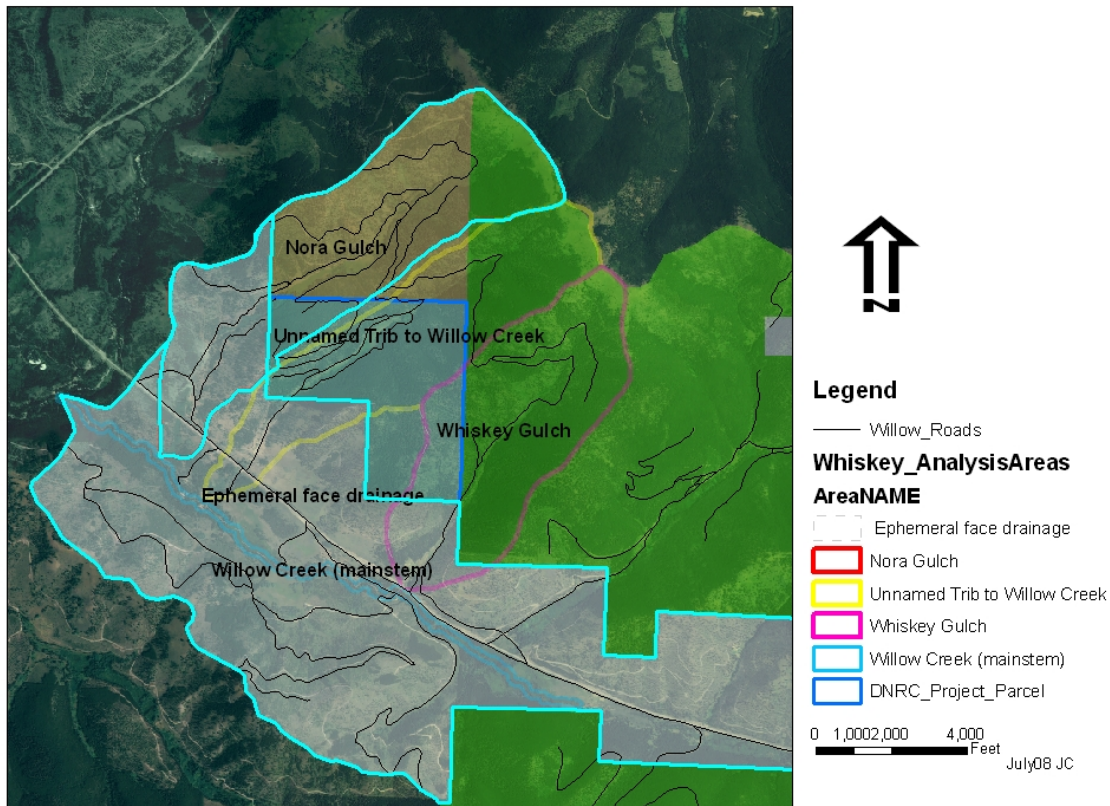
- DNRC_Project_Parcel
- Willow_Huc6

0,000,000 Feet

Ownership in this drainage is a mixture noted in table W1 and DNRC lands represents a small portion (3.8%) of the Willow Creek watershed.

Table W1 Land Ownership within Willow Creek 6 th Order Watershed, HUC 17010203202 12,401 acres		
Land Ownership	Acres	% of Watershed
U.S. Forest Service	8020	64.7
Undifferentiated Private lands	3436	27.7
Montana State trust lands - DNRC	473	3.8
Nature Conservancy	471	3.8
Total Acres	12401	

Whiskey Salvage Sale, Section 36, T15N, R7W Watershed Subdrainages



Water Uses and Regulatory Framework

The Clark Fork River drainage, including the Blackfoot River drainage and its tributaries are classified as B-1 in the Montana Surface Water Quality Standards. The water quality standards for protecting beneficial uses in B-1 classified watersheds are described in ARM 17.30.623. The B-1 classification is for multiple use waters suitable for domestic use after conventional treatment, growth and propagation of cold-water fisheries, associated aquatic life and wildlife, agricultural, and industrial uses. Other criteria for B-1 waters include; no increases are allowed above naturally occurring concentrations of sediment, which will prove detrimental to fish or wildlife. Naturally occurring includes conditions or materials present from runoff on developed land where all reasonable land, soil, and water conservation practices have been applied. Reasonable practices include methods, measures, or practices that protect present and reasonably anticipated beneficial uses. The State has adopted Forestry Best Management Practices through its Non-point Source Management Plan as the principle means of controlling non-point source pollution from silvicultural activities.

No water rights or developments are listed within the state section or along the access route. Downslope beneficial uses in Willow Creek and the Blackfoot River area include: domestic water sources, irrigation, livestock watering, wildlife, and cold-water fisheries.

Water Quality

Past management activities in the proposed project area include timber harvest, grazing, road construction, fire suppression and recreation. Within the Blackfoot watershed area, the lower 2.7 miles of Willow Creek and 1.3 miles of Sandbar Creek have been identified as partially impaired beneficial uses for drinking water, cold water fisheries and aquatic life in the 303(d) list that appears in the 2006 Montana 305(b) Report (DEQ, 2006). Probable impairment causes are sedimentation/siltation and flow regime alterations. Probable sources of the impairments are runoff from highway/road/bridge runoff, and streambank modifications/ destabilization. Undersized culverts on Highway 279 restrict fish passage on tributary streams (refer to fishery analysis). The

Willow creek tributary streams Nora Gulch, Whiskey Gulch and an unnamed tributary "A" that includes the DNRC project parcel, were not listed as impaired, but do have localized sediment problems.

A Total Max Daily Load (TMDL) Analysis and restoration plan has been completed for the upper Blackfoot including the Willow Creek watershed. Willow Creek has a moderate priority for restoration. TMDL recommendations include improving fish passage and reducing sedimentation through implementation of Best Management Practices (BMPs) on land management projects. Within the Willow Creek watershed, there are water quality impacts due to historic mining, sediment from roads that do not meet BMP's and grazing impacts on stream channels. The following is a description of the three Willow Creek sub-drainages that include the 471 acre DNRC project parcel:

Nora Gulch is a perennial Class 1 stream that drains approximately 862 acres and includes mixed ownership of Stimson Lumber, the Nature Conservancy, Forest Service and DNRC lands. DNRC owns roughly 90 acres within Nora Gulch. The Nora Gulch access road has several road drainage problems associated with inadequate road drainage and two undersized culverts. The main road in Nora gulch is not used or proposed to access DNRC land. Nora Gulch has a high road density. There are points of sediment delivery on private lands, yet considerable sediment is trapped by several beaver dams and wetlands along the lower stream segments, prior to flows reaching Willow Creek. The lower portion of Nora Gulch is grassland meadow and mixed sage and open conifer stands reflect the dry nature of the area. No sediment sources were noted on DNRC land. There are two hillside road segments that have advanced tree growth and are stable.

Whiskey Gulch drains approximately 659 acres and includes mixed ownership of Stimson Lumber, the Nature Conservancy, Forest Service and DNRC lands. The Whiskey Gulch road is overgrown and has inadequate road drainage and some unauthorized ATV traffic across multiple ownerships. This existing road into Whiskey Gulch would not be used for DNRC access. No surface waters or sediment sources were noted on DNRC land in Whiskey Gulch.

Unnamed Tributary drainage "A" includes the larger portion of DNRC ownership in section 36, T15N, R7W and has a perennial Class 1 stream that drains roughly 641 acre. The headwaters are Helena National Forest, the mid portion of the drainage is DNRC and the lower drainage is Stimson Lumber Co. ownership. Road densities within the proposed project area are moderate with 3.4 miles of existing road. Some portions of these roads have revegetated with trees and grass. The proposed timber haul route begins at HWY 279 and crosses roughly ½ mile of Stimson Timber land up to the DNRC boundary. This lower access road segment crosses clay rich soils and is rutted from unauthorized use when wet. Old roads parallel the broad meadow/stream bottom through the DNRC parcel, but are only adjacent to the stream for short segments at crossing sites and located on mainly deep gravelly resilient soils.

Several existing sediment sources noted in tributary "A" are: 1) An undersized culvert and downcut crossing on Forest Service land roughly ½ mile above the state ownership, 2) a 200 ft gully segment of stream with fair to poor channel stability on an old road at the eastern DNRC boundary, and 3) a road closure that washed out due in part to an undersized 18" culvert crossing and poor road location that has diverted flow for approximately 150 feet at the DNRC/Stimson boundary. Other historic existing roads are in fair condition due to the resilient gravelly soils, but there are several sites with inadequate drainage that do not fully comply with BMP standards. Sheep grazing across ownerships has lead to bank trampling in some locations. The combined effects of these described sediment sources have lead to segments of degraded channel conditions but buffering capacities of associated wetlands help trap sediment to limit the downstream impacts to beneficial uses.

Existing Cumulative Watershed Effects

Cumulative watershed effects can be characterized as impacts on water quality and quantity that result from the interaction of disturbances, both human-caused and natural. Tree canopy reduction by tree mortality or timber harvest activities can affect the timing of runoff, increase peak flows and increase the total annual water yield of a particular drainage. A DNRC hydrologist completed a qualitative assessment of watershed conditions and cumulative effects as outlined in the Forest Management Rules (ARM 36.11.423) concerning watershed management. Spruce bud worm and Mountain Pine Beetle infestations have caused extensive defoliation and tree mortality and associated loss of tree canopy, evapo-transpiration potential and snow interception. The current tree mortality is likely to increase water yield consistent with historic conditions of episodic insect mortality. However, stream channels in the project area are mainly in good condition, relatively stable and

functioning properly with the exception of the specific sediment source sites listed above. Normal sediment loads are being transported and the banks are well vegetated and stable. A trend towards more extensive infestations or possibly wildfire could considerably reduce tree canopy and may increase water yield in the future. Trees that may survive the insect damage will be suppressed, generally in poor health and not intercept or transpire moisture equivalent with healthy forest stands.

The combination of moderate precipitation (avg. 25"/yr.) and high gravel content soils allows for rapid water infiltration on mountain sideslopes and surface runoff is unlikely except on bare soils. Deep glacial till and alluvial soils form the stream bottoms and beaver ponds and wetlands help trap surface sediments and provide water storage which will help buffer and moderate flows within the DNRC project section 36.

Effects of the Proposed Actions

Alternative A - No Action The effects of the no action alternative would be the same as previously described under existing conditions for soils and water quality.

Alternative B-The proposed project would salvage harvest approximately 2.5 mmbf of dead and dying high-risk trees (Douglas fir / lodgepole pine) and improve spacing on approximately 374 acres. Seed trees and healthy trees that have exhibited a tolerance to insect damage would be retained. The action alternative would construct up to 4.5 miles of road and improve drainage on existing roads to meet BMP's. The action alternative would provide water quality and fisheries mitigation and restoration measures including: 1) abandon and obliterate approximately 1.5 miles of old, legacy road that do not meet BMPs and are not suitable for access, 2) relocate and enlarge a stream crossing to provide for fish passage and 3) stabilize an eroded stream segment. All roads would be grass seeded where soils are disturbed.

Soil Effects

Primary soil concern is minimizing detrimental soil impacts of displacement, compaction, rutting and erosion of shallow surface soils to retain soil properties important to growth and reduce overstocking. For the proposed harvest, BMP's and mitigations would be implemented to minimize the area and degree of detrimental soil impacts (displacement, erosion, and compaction). Mitigations include general skid trail planning, limit tractors to moderate slopes, avoiding wetlands and controlling soil disturbance to meet silvicultural goals to promote conifer regeneration. Ground based harvest operations would be limited to slopes less than 45%. Cable harvest would be used to minimize soil impacts on steeper slopes and protect areas adjacent to streamside management zones. With the implementation of BMP's and the recommended mitigation measures, harvest operations present low risk of detrimental impacts to soils in excess of 15% of the proposed harvest areas based on DNRC soil monitoring on comparable sites (Collins 2004).

We expect that by protecting 80 to 85% of harvest area in non-detrimental soil impacts we will maintain soil properties important to productivity. Sale administrators will monitor on-going harvest activities to meet contract requirements, BMP'S for soil and water protection and silvicultural objectives. Roads would be properly drained and reseeded to mitigate potential erosion and sediment delivery hazard as noted in the hydrology analysis.

Cumulative effects to soils can occur from repeated ground skidding entries into the harvest area and additional road construction, depending on area and degree of detrimental impacts. Previous ground based harvest occurred in the NW corner of the parcel over 30 years ago and some older (>50 yrs) harvest have recovered and revegetated. Less than 60 acres would have operations where previous harvest has occurred. Mitigations include use of existing trails and skid trail planning to avoid cumulative effects. Large woody debris would be maintained on the site at approximately 5-15 tons/acre (Graham 1994) well distributed and trampled to help maintain nutrient cycling for long term soil productivity, and to encourage reforestation. Improved tree spacing will reduce competition for nutrients and soil moisture, enhance growth of retained trees, and promote regeneration of conifers. The proposed harvest operations are expected to maintain soil properties important to plant growth and hydrologic function and present low risk of direct, indirect and cumulative impacts to soils.

Water Quality

Land management activities such as timber harvest and road construction could impact water quality primarily by accelerating sediment delivery to local stream channels and draw bottoms. These impacts can be caused by

ground disturbance, erosion from roads, or skid trails and by the proposed culvert replacement and restoration activities.

Proposed harvest on DNRC ownership within the Willow Creek Watershed will focus on salvage of dead, dying and high risk Douglas fir and lodgepole. The proposed timber harvest and road construction is expected to result in low risk of water quality impacts due to erosion and sediment delivery. Harvest operations are designed to minimize surface disturbance and potential for erosion and sediment delivery. Steeper slopes of approximately >45% will be cable harvested to minimize disturbance. Most harvest boundaries are well back from SMZ designations due to broad meadows. The limited locations where harvest units are adjacent to streams or wetlands would be protected by implementing all rules and regulations for Streamside Management Zones (SMZ), Riparian Management Zones (RMZ's) and Wetland Management Zones (WMZ), as required by law. Within the DNRC section, Tributary "A" has an extended grassland meadow of dense sedge and grasses and the SMZ / WMZ boundary will be extended to include adjacent wetlands. An SMZ width of 50 feet is required for Class 1 and 2 streams when the slope is 35% or less adjacent to a perennial stream. A SMZ width of 100 feet is required for slope greater than 35%. Wetland management zones (WMZ) of 50 feet are required for wetlands of 0.25 acres. No harvest is proposed within the first 50 feet of all SMZ's adjacent to fish bearing streams. The RMZ requirements for protection of fish bearing stream including retention of large woody debris (LWD) and shade is described in the fishery analysis and will be implemented. SMZ harvest is proposed in a short segment (approximately 200 feet) in the NE corner of the parcel using cable methods to minimize disturbance. Proposed mitigations provide a higher level of protection for LWD and reducing disturbance than required by law. The minor SMZ harvest would not reduce woody debris to a fish bearing stream (refer to fisheries assessment).

The action alternative would construct up to 4.5 miles of road including the removal of an undersized culvert and installation of a fish-passage structure. Road maintenance will also improve drainage on existing roads and to implement all applicable BMP's. New road construction is located on moderate grades of stable hillsides and present low risk of sediment delivery to stream. The action alternative would implement water quality and fisheries mitigations/restoration including: 1) combined abandonment and obliterate approximately 1.5 miles feet of old, legacy road that is not suitable for access, 2) relocate a road that is adjacent to the stream, 3) relocate and enlarge a stream crossing for fish passage and 4) stabilize an eroded stream segment. All roads would have adequate drainage installed and be grass seeded where soils are disturbed.

The proposed abandonment/obliteration of old roads and improved drainage on existing roads will reduce erosion and non-point sediment source. Stream crossing relocation and road relocations will reduce existing sediment sources and improve fish passage. During culvert installation, all requirements of 124 permit and erosion control measures (slash filter windrows, seeding) would be implemented, consistent with BMP's to minimize erosion. We expect a minor and short term pulse of sediment could occur during the crossing relocation/stabilization and stream restoration measures, but would not be measurable in Willow Creek.

The combination of abandonment/obliteration of old roads, improved crossing and stream restoration measures will reduce chronic erosion and sediment sources and improve water quality compared to no-action. The action alternative will provide a long term reduction in stream sedimentation and improve water quality consistent with Upper Blackfoot TMDL requirements. For all these listed reasons, there is low risk of direct or indirect impacts to water quality or downslope beneficial uses within the affected watershed.

Cumulative Watershed Effects:

The potential for increase in water yield resulting from the proposed harvest is expected to be negligible and unlikely measurable, compared to no-action. The action alternative is mainly salvage harvest of dead, dying and high risk trees. Many co-dominant and understory trees are suppressed, have lost 1/3 or more of their tree crowns through defoliation and are unlikely to recover and will continue towards reduced snow interception and transpiration. The proposed harvest will also improve tree spacing by removing severely suppressed and defoliated trees and by design, would retain seed trees and insect resistant trees. Most stream channel is in good condition with a short 200 ft G channel segment of fair to poor stability that is on the eastern boundary of the DNRC parcel and would not be affected by harvest activities.

There is low risk of cumulative watershed impacts due to water and sediment yield increases occurring from this harvest proposal due to the following reasons. The moderate precipitation zone (25"/yr), low to moderate level of

additional canopy removal, and small area (3.8%) of Willow Creek watershed would not noticeably increase water yield compared to the no-action of leaving dead and suppressed trees with lost canopy interception and evapotranspiration. The harvest with the action alternative would speed the regeneration of younger more actively growing trees that would intercept and transpire more water and lead to faster hydrologic recovery of the area.

The proposed combination of cable and ground based timber harvest is expected to result in low risk of erosion or sediment delivery. Proposed relocation of a stream crossing and stream rehabilitation would have low to moderate risk of short term sediment increase at the project sites, but would affect only a short segment of stream. The improved stream crossing and stream rehabilitation project will reduce long term sediment compared to no-action. The proposed action measures of sediment reduction combined with negligible water yield increase present low risk of cumulative impacts to water quality or beneficial uses.

General Design and Mitigations for Protection of Water quality, Soils, Cumulative Watershed Effects

* DNRC would implement all applicable BMP's, Montana Administrative Rules for Forest Management and reasonable mitigation and erosion control practices during timber harvest, road maintenance, road construction and road use activities

* DNRC would locate, mark and maintain suitable water resource protection boundaries including Streamside Management Zones (SMZ's), Riparian Management Zones (RMZ's), and Wetland Management Zones (WMZ's) adjacent to streams and wetlands consistent with State Forest Land Management rules.

*The logger and sale administrator should agree to a general skidding plan prior to equipment operations on complex terrain or draw crossings. Ground based skidding would be limited to slopes of 45% or less.

* Limit equipment operations to periods when soils are relatively dry, frozen or snow covered to minimize soil rutting, compaction and maintain drainage features.

* On moderate to densely stocked stands, whole tree skidding can reduce slash hazard, but also remove a portion of nutrients from growing sites. Harvest operations should retain a portion of available green slash to provide for erosion control on trails where needed and nutrient cycling to maintain soil productivity. Target woody debris levels are to retain 5-15 tons/acre well distributed on site while meeting the requirements for fire protection. On the rock outcrop sites with lower BA, retain large woody debris as feasible since it may not be possible to retain 5 tons/acre and the emphasis will be on providing additional CWD in the future.

Roads

Existing road segments would be improved and maintained in association with the harvest activities. Road improvements would include installation of drainage features to prevent surface erosion and sediment delivery to the stream, ditching to improve road surface stability and surface blading.

* Portions of existing roads that have inadequate drainage and do not comply with BMP's will be reconstructed to improve drainage control and erosion and should have adequate drainage maintained during use.

* Road use will be limited to dry or frozen ground conditions to reduce rutting and erosion. New road construction, including drainage features must be completed in the fall prior to freeze-up. Check snow/frozen ground conditions prior to operations.

* New roads would be closed to motor vehicles upon completion of harvest activities. Slash would be placed on main skid trails to protect soils and reduce erosion potential and potential unauthorized ATV use as needed.

*Newly constructed or reconstructed road cuts, fills and disturbed soils would be grass seeded immediately after excavation.

* The relocated stream crossing installation and bank stabilization would meet the requirements of the FWP 124 permit issued for this project for erosion control and stream protection. On the stream stabilization segment the channel banks would be backsloped and reshaped to near original ground terrain and all disturbed soils grass seeded for prompt revegetation.

References

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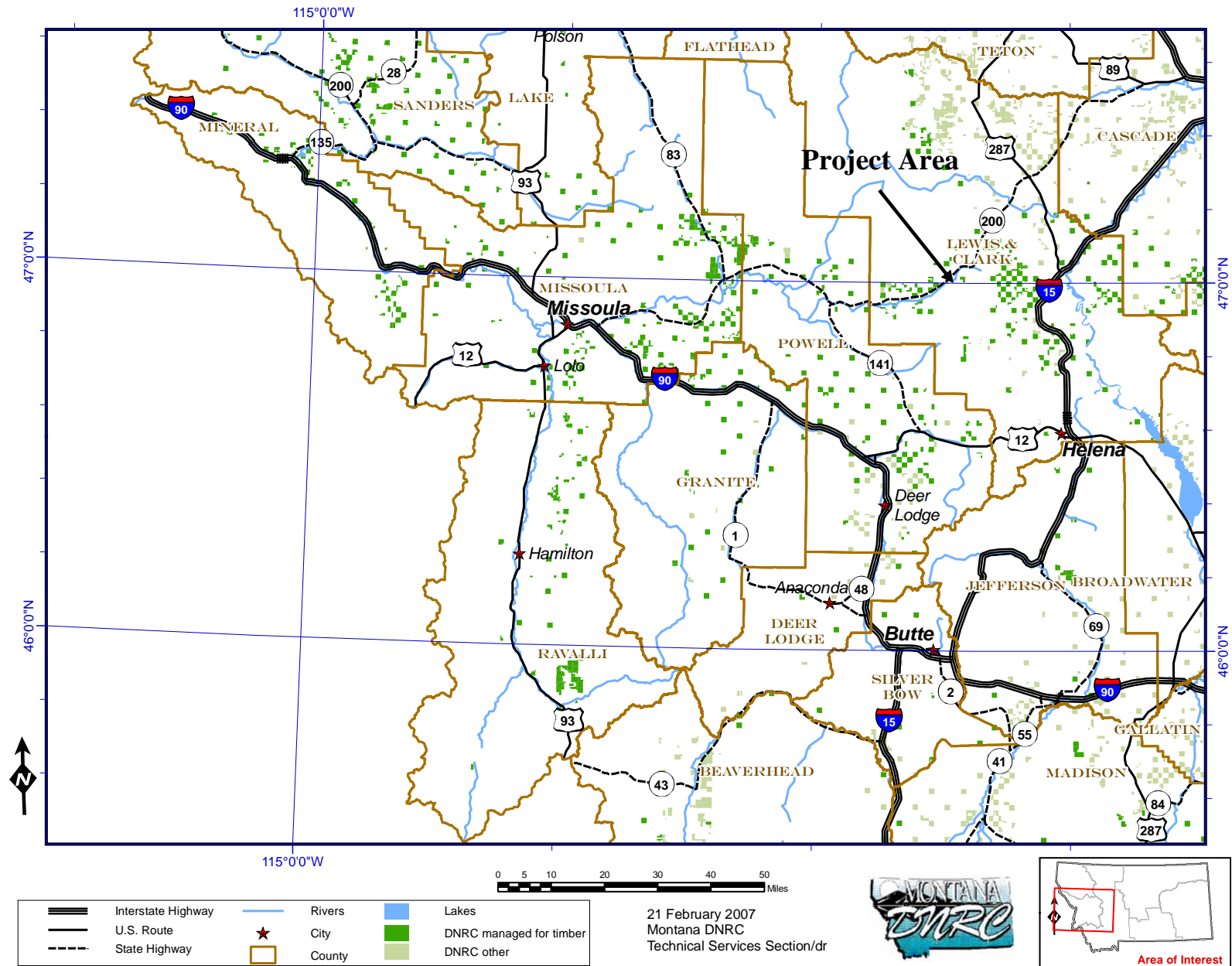
Attachment E

Initial Proposal

Insert Initial proposal On Letterhead

Whiskey Gulch Salvage Timber Sale

Lincoln Field Office, Montana DNRC



July 25, 2007

Initial Proposal
Whiskey Gulch Salvage Timber Sale

The Montana Department of Natural Resources and Conservation is proposing a timber sale on the following state owned parcel, located approximately 12 miles northeast of Lincoln, MT.

Section 36 Township 15N. Range 7W.
Common School Trust

The primary objective of this proposal is to salvage harvest Douglas-fir trees that have been or are likely to be killed by Western spruce budworm. Additional live trees may be harvested within the proposed project area.

The proposed project plans to remove an estimated 2.0 million board feet of timber, from approximately 300 acres. Approximately 3.5 miles of new road would be constructed to access the proposed harvest areas. The proposed action would likely begin in the summer of 2008.

The D.N.R.C. is in the scoping phase of the project environmental assessment so all volumes and acreages are preliminary estimates. In preparation for this project, specialists such as wildlife biologists, hydrologists, soil scientists, and archeologists will be consulted.

The Montana D.N.R.C. invites comments and suggestions concerning this proposal from all interested parties. Please respond by August 25, 2007 to:

Department of Natural Resources and Conservation
Attn: Neil Simpson
Lincoln Field Office
PO Box 127 Lincoln, MT 59639

or: **mailto:nsimpson@mt.gov**
or: **(406) 362-4999**